ENGINEERING CHANGE NOTICE

1. ECN 189920

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. Date
Supplemental [ ] Direct Revision [x] Change ECN [ ] Temporary [ ] Standby [ ] Supersedure [ ] Cancel/Void [ ]	J. A. Locklair, Environmental Restoration Safety Support, H4-67, 6-4409	October 5, 1993

5. Project Title/No./Work Order No.	6. Bldg./Sys./Fac. No.	7. Impact Level
N/A	N/A	2 ESQ

8. Document Numbers Changed by this ECN (includes sheet no. and rev.)	9. Related ECN No(s).	10. Related PO No.
WHC-SD-EN-SAD-016, VOL. 3, Rev. 0-A	N/A	N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[ ] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

Revisions provide information on the two hazardous material storage buildings that will temporarily store suspect mixed waste, suspect waste awaiting analysis, and radioactive mixed waste pending disposition for permanent disposal.

13a. Justification (mark one)							
As-Found	[ ]	Criteria Change	[ ]	Design Improvement	[ ]	Environmental	[X]
		Facilitate Const.	[ ]	Const. Error/Omission	[ ]	Design Error/Omission	[ ]

13b. Justification Details

See Block 12.

14. Distribution (include name, MSIN, and no. of copies)

See attached distribution sheet.

RELEASE STAMP

OFFICIAL RELEASE BY WHC (20)

DATE NOV 30 1993

Sta. 21

A-7900-013-2 (06/92) GEF095

A-7900-013-1 (06/92)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 189920

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]		[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog Engineer D. J. Moak	Optional 10-7-93	PE N/A	
Cog. Mgr. R. A. Carlson for	11/24/93	QA N/A	
QA T. L. Bennington	11/29/93	Safety N/A	
Safety K. A. Smith	11-24-93	Design N/A	
Security N/A		Environ. N/A	
Environ. K. A. Gano		Other N/A	
Projects/Programs N/A			
Tank Waste Remediation System N/A			
Facilities Operations N/A		DEPARTMENT OF ENERGY	
Restoration & Remediation		Signature or Letter No.	
Operations & Support Services N/A			
IRM		ADDITIONAL	
Other			
SA&E N. R. Kerr	10-7-93		
SA&E J. J. Zimmer	10-7-93		

SUPPORTING DOCUMENT

1. Total Pages 117

2. Title	3. Number	4. Rev No.
Safety Assessment for Environmental Investigations and Site Characterizations Volume 3: Aggregate Safety Assessment for Installing Groundwater Monitoring Wells	WHC-SD-EN-SAD-016 Volume 3	0-B

5. Key Words	6. Author
safety assessment groundwater monitoring wells abandonment/decommissioning groundwater contamination safety storage buildings	Name: J. A. Locklair J. A. Locklair Signature Organization/Charge Code 29550/PLBAH

APPROVED FOR PUBLIC RELEASE
11/29/93 DS

7. Abstract

This safety assessment addresses the installation, development, sampling, remediation, and abandonment of groundwater monitoring wells and accesses the adequacy of existing work procedures.

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA.

DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

9. Impact Level 2 ESQ

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC
DATE NOV 30 1993
Sta. 21

9413053-0727

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RECORD OF REVISION

(1) Document Number: WHC-SD-EN-SAD-016, Vol. 3

(2) Title

Safety Assessment for Environmental Investigations and Site Characterizations
Volume 3: Aggregate Safety Assessment for Installing Groundwater Monitoring Wells

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) Rev. 0 released per EDT 159897 Rev. 0-A released per ECN 189912 Rev. 0-B released per ECN 189920		
0-A	Replace Contents page; this page has been revised to reflect new page numbers and additions. Replace pages 14 to 28. Changes reflect the well-casing perforating techniques considered and selected for perforation of wells.	L. C. Hulstrom (signature on file)	R. A. Carlson (signature on file)
0-A	Add Appendixes A, B, and C. Appendix A provides an indepth explanation of the selected perforation method and a work plan for safe operations. Appendix B includes information on the generation and attenuation of seismic energies resulting from the selected method. Appendix C provides an analysis of the soil column contaminant inventory of Well 299-W18-19.	L. C. Hulstrom (signature on file)	R. A. Carlson (signature on file)
0-B RS	Replace table of contents, pages 28 and 29, and insert page 15.1. Pages 28 and 29 have been revised to reflect a reference addition. Page 15.1 has been added to provide information on the use of two hazardous material storage buildings. Appendix D is the maintenance manual that provides detailed specifications for the buildings. ECN-189920	D. J. Moak per Telecon	R. A. Carlson for RAC 11/29

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LIST OF TRADENAMES AND COMPANY OWNERSHIP FOR WHC-SD-EN-SAD-016, VOLUME 3

HydroStar	Instrumentation Northwest Incorporated.
Odex	Atlas Copco and Aktiebolag, Stockholm, Sweden.
TORIT	TORIT Manufacturing Company, St. Paul, Minnesota.
Mills Knife	Mitchell, Lewis & Staver Co., Wilsonville, Oregon.
PerfHawk	Hawk Industries, Inc., Woodland, California.
Jet Shot	Cogco, Inc., Woodland, California.
Safety Storage Inc.	Safety Storage, Inc., Hollister, California.

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APPENDICES

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LIST OF FIGURES

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2.13 STORAGE OF SUSPECT MATERIAL

In compliance with WHC-CM-7-7, EII 4.2 and 4.3, a storage area for suspect material awaiting analysis and other hazardous material will be constructed in the 200 East Area pipe yard. This storage area meets the requirements in WAC 173-303-200. The temporary storage area will use hazardous material storage buildings manufactured by Safety Storage, Inc.[7] (Appendix D is the maintenance manual that provides detailed specifications for the buildings.) The two buildings will be designated to temporarily store suspect mixed waste, suspect waste awaiting analysis, and radioactive waste pending disposition for permanent disposal. The buildings will be hard wire to eliminate the use of portable generators, a possible fuel source that would be near a storage facility for suspect waste. Appendix D provides the location of the pipe yard and the designated site for the temporary storage buildings. It is anticipated that the inventory for these two buildings will not exceed 12 drums of suspect soils awaiting analysis.

[7]Safety Storage Inc. is a registered trademark of Safety Storage, Inc., Hollister, California. Written permission to use this copyrighted information has been granted by Safety Storage, Inc.

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WAC 173-160, 1990, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

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WHC-CM-7-5, *Environmental Compliance Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-4-10, *Radiation Protection Manual*, Westinghouse Hanford Company, Richland, Washington

WHC-CM-6-32, *Safety Analysis and Regulation Work Procedures*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual*, Westinghouse Hanford Company, Richland, Washington.
EII 4.2, "Interim Control of Unknown, Suspected Hazardous and Mixed, and Radioactive Waste."
EII 4.3, "Control of CERCLA and Other Past Practice Investigation Derived Waste."
EII 4.4, "Control and Storage of Radioactive Materials and Equipment."
EII 5.2, "Soil and Sediment Sampling."
EII 5.4, "Field Decontamination of Drilling, Well Development and Sampling Equipment."
EII 5.8, "Groundwater Sampling."
EII 5.11, "Sample Packaging and Shipping."
EII 6.4, "Resource Protection Well Services."
EII 6.6, "Resource Protection Well Characterization and Evaluation."

EII 6.7, "Resource Protection Well and Test Borehole Drilling."
EII 6.8, "Well Completion."
EII 6.10, "Abandoning/Decommissioning Ground Water Wells."
EII 8.3, "Remediation of Groundwater Wells."
EII 10.1, "Aquifer Testing."
EII 10.3, "Purgewater Management."
EII 10.4, "Well Development Activities."

APPENDIX D

FIELD INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

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PO# WJP-VVV-202-669

SAFETY STORAGE INC.

1(800)344-6539 FAX: (408)637-7405

FIELD INSTALLATION, OPERATION & MAINTENANCE MANUAL

HAZARDOUS MATERIAL STORAGE BUILDINGS

STEEL MODELS: 7, 15, 22

2 HOUR FIRE RATED MODELS: 6, 10, 14, 30, 44, 60

SUPERSEDES ALL PREVIOUS INSTALLATION & OPERATIONS MANUALS

EFFECTIVE DATE: MAY 1992

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TABLE OF CONTENTS

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Preface

This installation, operation and maintenance manual has been prepared as a convenience to the customer, user, governing regulation agency or maintenance/facility personnel. The information presented herein is believed to comply with the accepted enforceable standards of the major Building, Electrical, Fire and Environmental Protection Agencies and their respective codes. In cases where the application, location or use of the building in a particular installation differs from the information contained in this manual, the governing building or fire official's requirements will apply. Following installation, this manual will serve as a guide for recommended building and systems maintenance procedures the manufacturer feels is required in order to assure safe and reliable chemical storage, spill containment, and security for which the building was originally designed for.

Your building as delivered, and unless otherwise expressly stated in any accompanying documents, has been designed to withstand the following criteria:

Snow Loading: 40 psf.

Seismic Zone: 4

Wind Loading:
Exposure C: 110 MPH

Combined Loading per UBC 1988:
Dead Load + 1/2 wind or/
Dead Load + 3/4 snow + seismic

Maximum Floor Loading: 250 pounds / square foot

The installation section of this manual assumes that the site and location is in a qualified zone for the above environmental exposures. It will be the requirement of the customer or end user to obtain the assistance of a local, licensed civil or structural engineer to perform required calculations on the structure if unique or unusual exposures are to be encountered. Safety Storage assumes no responsibility for the structure in whole or in part, if the structure is in any way modified by others so as to meet these unique or unusual exposure requirements.

LIMITED WARRANTY, DISCLAIMER, HOLD HARMLESS AGREEMENT

SAFETY STORAGE, INC. (SSI) PRODUCTS

Except as indicated below, your SSI building is warranted to you as the original purchaser for one (1) year from date of delivery against defects in workmanship and material. Defects must be reported to the SSI Customer Service Department within one (1) year of delivery. SSI will replace or repair, at SSI's option, any product which, in its opinion, is defective and has not been tampered with, modified, subjected to an accident, misuse or abuse, subjected to use in extreme conditions not expressly communicated to SSI, or not maintained, inspected and tested in accord with the Maintenance Manual. At the option of the SSI Customer Service Department, a product shall be replaced or repaired at the customer's site using factory personnel or outside contractors under SSI direction.

PURCHASE PRODUCTS OR PARTS

Items which are not manufactured but purchased by SSI are warranted against defects resulting from the manufacturer's fabrication process or parts for one (1) year from the date of delivery. Such items include but are not limited to: switches, lights, electrical boxes, air conditioners, heaters, fan motors, dry chemical fire protection equipment, fusible links, door closures, door locks, electrical relays, thermostats, pressure relief valves, shut-off valves, etc. Such items should be returned postage paid to the SSI Hollister, California factory with the prior approval of the SSI Customer Service Department. Evaluation of each reportedly defective part will be made by the original manufacturer or an agent thereof and their judgment shall be final.

DISCLAIMER AND LIMITATION OF DAMAGES

Except as stated in the warranty above for Safety Storage, Inc. (SSI) products and purchased products or parts, SSI makes no other warranties whatsoever. Whether express or implied, including the warranties of merchantability and fitness for particular purpose. SSI does not assume or authorize any person to assume for it any liability in connection with the sales of this product. Under no circumstances shall SSI be liable for any special, incidental, consequential, or indirect damages. SSI's maximum liability for any direct damages shall be limited to the purchase price paid by the customer for the particular product.

MODEL NO. _____ SERIAL NO. _____ MFG. DATE _____

CUSTOMER _____

This building should only be used in accordance with your designated Safety/Chemical Engineer's procedures and for the chemicals, concentrations and quantities specifically authorized. This information should be affixed to the building in an easily observable location.

This building was fabricated to your specific order. Safety Storage, Inc. is not responsible for compliance with applicable fire, electrical, building, environmental, safety or other regulations and codes.

Safety Storage is not responsible for accidents occurring in conjunction with the use of this building. See our Limited Warranty, Page 3.

This building and its equipment must be tested and maintained periodically. See Page 47.

Your Safety Storage, Inc. hazardous material storage building is an engineered product designed and manufactured for a specific use. In order that you continue to receive the full, safe and reliable use of this building, Safety Storage, Inc. has compiled the following important information. It is mandatory that all personnel having access to your hazardous and flammable materials, and/or to this building, be adequately trained in the handling and use of your materials, and especially in the use, inspection and operation of your Safety Storage Inc. building and systems.

GENERAL INFORMATION

SUMMARY OF IMPORTANT WARNINGS, CAUTIONS, RECOMMENDATIONS AND NOTES

SAFETY STORAGE, INC. BUILDING MODELS: 7, 15 & 22 AND 14-FR, 30-FR & 44-FR

ADDITIONAL INFORMATION AND ANY RELATED APPLICATION OR INSTALLATION INFORMATION CAN BE FOUND ON THE PAGES AS NOTED AT THE END OF EACH WARNING, CAUTION, RECOMMENDATION, AND GENERAL INFORMATION NOTE.

WARNING

ACTUAL SHIPPING WEIGHTS ARE PROVIDED PRIOR TO SHIPPING. CUSTOMER SHALL ASSURE THAT THE LIFTING EQUIPMENT IS CAPABLE OF SAFELY LIFTING AND MOVING THE BUILDING WEIGHT. MINIMUM RECOMMENDED LIFTING CAPACITIES ARE GIVEN IN THE CHART. WHEN FIGURING CAPACITY, ACCOUNT FOR 48" FORKLIFT LOAD CENTER.

FOUND ON PAGES 36 - 39

WARNING

ELECTROCUTION HAZARD! CHECK OVERHEAD CLEARANCE BEFORE MOVING BUILDING. THE AREA MUST BE FREE OF OVERHEAD ELECTRICAL, PLUMBING OR OTHER POTENTIALLY HAZARDOUS OBSTRUCTIONS.

FOUND ON PAGES 36 - 39

WARNING

THE DESIGN AND RECOMMENDATIONS FOR SPRINKLER SYSTEM HOOK-UP FOR THE MODEL 22, 15, 7 AND 44, 30, 14 SAFETY STORAGE BUILDINGS HAVE BEEN ENGINEERED FOR THOSE BUILDINGS ONLY, AND SHALL NOT BE USED ON ANY OTHER SYSTEM OR BUILDINGS. ALL HOOK-UPS SHALL COMPLY WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

FOUND ON PAGE 45

WARNING

ONLY QUALIFIED ELECTRICIANS ARE TO BE USED FOR ROUGH AND FINISH ELECTRICAL INSTALLATION. FACTORY SUPPLIES ELECTRICAL PANEL PRE-WIRED FOR ALL SYSTEMS AND SPECIFIES ELECTRICAL REQUIREMENTS FOR EACH CONNECTION. FIELD WIRING SHALL COMPLY WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

FOUND ON PAGES 44 - 45

WARNING
GROUNDING ROD AND CABLE MUST BE INSTALLED AS SHOWN, OR AS PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. IMPROPER INSTALLATION MAY ALLOW STATIC BUILD-UP IN THE BUILDING WHICH MAY RESULT IN EXPLOSION.

FOUND ON PAGE 45

CAUTION
POWER REQUIREMENTS SHOULD BE DETERMINED AFTER CUSTOMER REQUIRED OPTIONS ARE DEFINED. SAFETY STORAGE, INC. WILL PROVIDE ACTUAL REQUIREMENTS BASED ON MINIMUM ELECTRICAL SYSTEMS USE, OR ON SITE HI-SERVICE POWER AVAILABLE.

FOUND ON PAGES 44 & 45

CAUTION
THESE DRAWINGS INDICATE THE STANDARD LOCATION OF POWER INPUT ON SITE. BASED ON ACTUAL CUSTOMER ORDER, LOCATION OF FEEDER LINES AND POWER PANEL MAY CHANGE. CONSULT CUSTOMER ORDER FORM TO VERIFY PANEL LOCATION PRIOR TO INSTALLING UNDERGROUND FEEDER LINES OR JUNCTION BOXES.

FOUND ON PAGE 44

CAUTION
THE 208, 240 AND 480 VOLTS (OPTIONAL) SHOWN IN THE HEATING SCHEMATICS ARE INTENDED TO SERVE AS A GUIDE FOR THE LOCAL ELECTRICIAN TO TAP PHASES OR OTHER AVAILABLE POWER TO ACHIEVE REQUIRED POWER FOR HEATERS. ACTUAL WIRING DETAILS ARE TO BE DETERMINED ON SITE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

FOUND ON PAGE 45

CAUTION
BUILDING IS UNSTABLE WHILE BEING LIFTED. EXTREME CAUTION IS TO BE USED IN HIGH WIND OR GUSTY WIND CONDITIONS. WORKER INJURY OR EQUIPMENT DAMAGE MAY RESULT.

FOUND ON PAGES 36 - 39

CAUTION
EYE HOOKS ON THE TOP OF THE BUILDING ARE NOT TO BE USED FOR LIFTING. THESE ARE FOR FACTORY MANUFACTURING PURPOSES ONLY AND ARE NOT INTENDED FOR ANY FIELD USE WHATSOEVER.

FOUND ON PAGES 36 - 39

CAUTION
BE SURE FOUNDATION PAD IS LEVEL. A ONE (1) DEGREE CHANGE IN ELEVATION ALONG THE LENGTH OF A MODEL 22 CAN REDUCE EFFECTIVE SPILL CONTAINMENT CAPACITY BY 16 GALLONS AND CAUSE THE LIQUID LEVEL ALARM TO BE PREMATURELY ACTIVATED AND/OR NOT ACTIVATED IN CASE OF SPILL.

FOUND ON PAGE 42

CAUTION
VOIDS UNDER FLOOR SUPPORT BEAMS MAY CAUSE THE SUMP PAN TO BE PUNCTURED BY LOADING FLOOR GRATE SUPPORTS AT LESS THAN THE FLOOR DESIGN LOAD RATING OF 250 P.S.F. FILL VOIDS IN SLAB FOUNDATIONS.

FOUND ON PAGE 42

CAUTION
DETAILS ARE SHOWN FOR INSTALLATIONS WHICH COMPLY WITH THE RATED ENVIRONMENTAL EXPOSURE OUTLINED IN THE PREFACE. IN CASES WHERE EXPOSURE EXCEEDS THE RATINGS, CUSTOMER IS RESPONSIBLE FOR CONTRACTING A LICENSED ENGINEER TO DESIGN ADEQUATE STRUCTURAL DETAILS FOR THAT INSTALLATION.

FOUND ON PAGE 2

CAUTION
WHEN LIFTING BUILDING WITH A CRANE, IN ADDITION TO OTHER WARNINGS AND CAUTIONS IN THIS SECTION, OBSERVE THE FOLLOWING: (1) LIFT WITH CAPACITY APPROVED CHAIN, CABLE OR STRAPS; (2) STRAP UNDER BUILDING ONLY THROUGH CHANNELS LABELED "FORKS HERE"; (3) USE SPREADER BARS (MINIMUM 8-1/2 FEET), MINIMUM 2 FEET OVER ROOF, TO PREVENT DAMAGE TO FRONT AND REAR ROOF OVERHANGS; AND (4) AT LEAST ONE END OF THE BUILDING IS TO BE TETHERED TO PREVENT BUILDING FROM SWINGING OR ROTATING IN AN UNCONTROLLABLE MANNER.

FOUND ON PAGES 36 - 39

CAUTION
MAXIMUM RAMP PITCH SHOULD NOT EXCEED 1" DROP IN 15" RUN I.A.W. UBC. MAXIMUM HAND TRUCK OPERATOR SAFETY IS ACHIEVED BY PROVIDING A MINIMUM 60" SQUARE LEVEL LANDING, ALTHOUGH A 1/15 RAMP SERVES LANDING REQUIREMENT.

FOUND ON PAGE 43

CAUTION
REINFORCED CONCRETE AND STRUCTURAL LUMBER LANDINGS SHALL BE DESIGNED BY A LOCAL LICENSED ENGINEER RETAINED BY THE USER. INFORMATION ON THIS PAGE IS TO SERVE AS A DESIGN GUIDE ONLY.

FOUND ON PAGE 43

RECOMMENDATION
IT IS RECOMMENDED THAT FOR ALL BUT NEW SLABS AND FOUNDATIONS, THAT THE EXISTING SLAB OR PAVEMENT (IF LEVEL) BE: (1) MARKED FOR HOLD-DOWN LOCATIONS; (2) FOUR HOLES, MINIMUM OF 18" DIAMETER BY MINIMUM 12" DEEP (OR 18" BELOW FROST LINE) BE EXCAVATED; (3) AFTER BUILDING IS SET ON LOCATION, THAT THE HOLES BE FILLED WITH CONCRETE AND MUD-SET "J" ANCHOR BOLT (PER FOLLOWING PAGE) BE SET IN PLACE; AND (4) TIGHTEN AFTER CONCRETE IS CURED.

FOUND ON PAGES 40-41

GENERAL INFORMATION
FIRE SPRINKLER SYSTEM SHALL BE CONNECTED TO A RELIABLE WATER SUPPLY CAPABLE OF FURNISHING 120 GPM @ 37 PSI AT THE 2" WATER SUPPLY CONNECTION POINT. SUPPLY PIPING SIZE, MATERIALS AND ARRANGEMENT SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION.

FOUND ON PAGE 45

NOTE
WIRING REQUIREMENTS FOR TEMPERATURE CONTROLLED BUILDING AIR CONDITIONING SYSTEMS ARE DELIVERED TO THE BUILDING SITE ONLY WHEN THAT SYSTEM IS ORDERED AS AN OPTION.

FOUND ON PAGE 45

SAFETY STORAGE REGULATION COMPLIANCE LIST

Safety Storage, Inc., storage buildings meet, and in most cases exceed, all of the regulations pertaining to the storage of flammable liquids and other hazardous materials.

Generally, Safety Storage Buildings meet or exceed applicable Uniform Building Code (1988 Edition), Standard Building Code (1988 Edition), SOCA National Building Code (1987 Edition), NFPA, UFC, EPA, NEC, CAC, and OSHA Codes with respect to compliance in design. In addition, Safety Storage meets all applicable ANSI, AWS, AISC, US Product, and ASTM standards governing materials and fabrication.

Safety Storage buildings are designed to provide the safest indoor and outdoor storage of chemicals and hazardous waste materials. These units provide a safe, secure storage area with built-in secondary spill containment to prevent groundwater contamination.

FACTORY MUTUAL (FM) APPROVALS 1N7A8.AF (July 1987), 2P9A8.AF (August 1988, and 1Q7A0.AF (January 1989). Safety Storage Building Models 22, 15, and 7, standard steel configurations and steel with explosion relief panels have been evaluated and approved by Factory Mutual Research Corporation (FM). Safety Storage's Fire-rated Building Models 44-FR, 30-FR, and 14-FR are also Factory Mutual System (FM) Approved with and without explosion vent panels.

The following is a summary of some of the specific regulations pertaining to material storage facilities:

BUILDINGS, GENERAL:

Uniform Building Code, 1985, Sec. 903 and Table No. 5A: Table No. 5A and Section 903 indicate that the exterior walls of a Group H, Division 2 Occupancy may be non-rated if the building is located at least 20 ft. from property line and is less than 1500 sq.ft. in area. An H-2 occupancy may be located between 5-10 ft. from property line when exterior walls have a 2-hour fire-resistance rating per Table No. 5A.

Uniform Building Code, 1988, Table No. 9C: Table No. 9C indicates that either an H-2 or H-3 occupancy, when not required to be in a detached building, may be located between 5-10 ft. from property line if its exterior walls are 2-hour fire-resistance rated. If the structure's exterior walls are non-rated, it must be located at least 30 ft. from property line if it is greater than 1500 sq.ft. in area but may be located 20 ft. from property line if it is less than 1500 sq.ft. in area.

SECONDARY CONTAINMENT:

Santa Clara County Fire Chief's Association Hazardous Materials Model Storage Ordinance, 1983: In the case of an installation with a single primary container, the secondary containment shall be large enough to contain 110% of the volume of the primary container. In the case of a storage facility with multiple containers, the secondary containment shall be large enough to contain 150% of the volume of the largest primary container placed in it or 10% of the aggregate internal volume of all primary containers in the storage facility, whichever is greater.

Santa Clara County Fire Chief's Association Hazardous Materials Model Storage Ordinance, 1983: Primary containment shall be product tight. Secondary containment shall be constructed of materials of sufficient thickness, density, and composition so as not to be structurally weakened as a result of contact with the released hazardous materials and so as to be capable of containing hazardous materials released from a primary container for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of the released hazardous material.

Uniform Building Code, 1988, Sec. 902(b): Floors in areas containing hazardous materials shall be of non-combustible construction.

Uniform Building Code, 1988, Sec. 902(c) - Spill Control: Floors shall be recessed a minimum of 4 inches or shall be provided with a liquid-tight raised sill with a minimum height of 4 inches so as to prevent the flow of liquids to adjoining areas.

Uniform Fire Code, 1988, Sec. 80.301(1)2. - Spill Control: Floors shall be recessed a minimum of 4 inches or shall be provided with a liquid-tight raised sill to a minimum height of 4 inches so as to prevent the flow of liquid to adjoining areas.

Uniform Fire Code, 1988, Sec. 80.301(1)4. - Containment: Secondary containment shall be designed to retain the spill from the largest single container plus the design flow rate of the automatic fire-extinguishing system for the area of the room or area in which the storage is located or the system design area, whichever is smaller. The containment capacity shall be capable of containing the flow for a period of 20 minutes. Overflow from the secondary containment system shall be provided to direct liquid leakage and fire-protection water to a safe location.

Uniform Fire Code, 1988, Sec. 79.804(1) - Inside Use, Dispensing and Mixing Room: Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the room shall be at least 4 inches below surrounding floors.

Standard Fire Prevention Code. 1988. Sec. 904.5.3 - Inside Storage Rooms: Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches high or the floor in the room shall be at least 4 inches below surrounding floors.

Title 29. Code of Federal Regulations (OSHA) Sec. 1910.106(d)(4)(i): Openings from inside flammable liquid storage rooms to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the storage area shall be at least 4 inches below the surrounding floor.

Title 40. Code of Federal Regulations. Protection of Environment. 1988. Sec. 264.175(b)(3): The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater.

VENTILATION:

Uniform Building Code. 1985. Sec. 905: In all buildings or portions thereof where Class I, II, or III-A liquids are used, mechanical exhaust ventilation shall be sufficient to produce four (4) complete air changes per hour. Such exhaust ventilation shall be taken from a point at or near the floor level.

Uniform Building Code. 1988. Sec. 905: Rooms in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or may be emitted due to the processing, use, handling or storage of materials shall be mechanically ventilated as required by the Fire Code and the Mechanical Code.

The 1990 Supplement to the Uniform Codes. Uniform Fire Code Sec. 79.203(e) - Ventilation: Liquid storage rooms shall be ventilated in accordance with U.F.C. Section 80.301(m).

The 1990 Supplement to the Uniform Codes. Uniform Fire Code Sec. 79.204(e) - Ventilation: Liquid storage warehouses shall be ventilated in accordance with U.F.C. Section 80.301(m).

Uniform Fire Code. 1988. Sec. 79.804(3) - Inside Use. Dispensing and Mixing Room: Ventilation shall be designed to provide for a complete change of air within the room at least six times per hour.

Uniform Fire Code. 1988. Sec. 80.301(m): Indoor storage areas and storage buildings shall be provided with mechanical exhaust ventilation installed in accordance with the mechanical code (Exception: where natural ventilation can be shown to be acceptable for the materials stored). Mechanical ventilation shall be at a rate of 1 cubic foot per minute per square foot of floor area over the storage area. Systems shall operate continuously but alternate designs may be approved by the chief.

Uniform Fire Code. 1988. Sec. 80.402(b)2.B. - Ventilation. Dispensing and Use: When gases, liquids or solids having a hazard ranking of 3 or 4 in accordance with U.F.C. standard No. 79-3 are dispensed or used, mechanical exhaust ventilation shall be provided to capture fumes, mists or vapors at the point of generation.

National Fire Protection Association (NFPA) 30, Flammable and Combustible Liquids Code. 1987. Sec. 4-4.1.6 (Inside Rooms): Every inside room shall be provided with either a gravity or a continuous mechanical exhaust ventilation system. Mechanical ventilation shall be used if Class I liquids are dispensed with the room.

National Fire Protection Association (NFPA) 30, Flammable and Combustible Liquids Code. 1987. Sec. 4-4.1.6 (b) (Inside Rooms): Mechanical ventilation systems shall provide at least one cubic foot per minute of exhaust per square foot of floor area, but not less than 150 cfm.

National Fire Protection Association (NFPA) 30, Flammable and Combustible Liquids Code. 1987. Sec. 4-4.1.6 (e) (Inside Rooms): Exhaust air shall be taken from a point near a wall on one side of the room and within 12 in. (30 cm) from the floor. The location of both the exhaust and inlet air openings shall be arranged to provide, as far as practicable, air movements across all portions of the floor to prevent accumulation of flammable vapors. Exhaust from the room shall be directly to the exterior of the building without recirculation.

Title 29, Code of Federal Regulations (OSHA), 1988. Sec. 1910.106 (d)(4)(iv): Every inside storage room shall be provided with either a gravity or a mechanical exhaust ventilation system. Such system shall be designed to provide for a complete change of air within the room at least six (6) times per hour.

Standard Fire Prevention Code. 1988. Sec. 904.5.5 (Inside Storage Rooms): Ventilation shall be designed to provide for a complete change of air within the room at least six (6) times per hour. Ventilation shall be installed in accordance with the provisions of NFPA 91. It shall be controlled by a switch located outside of the door.

Standard Fire Prevention Code. 1988. Sec. 905.4.1: Buildings or other enclosures in which flammable or combustible liquids are stored in open systems and processes shall be provided with ventilation sufficient at all times to prevent accumulation of flammable vapors.

National Fire Protection Association (NFPA) 91. Blower and Exhaust Systems. 1987. Sec.2-3.3: Ducting shall be constructed to provide structural strength and stability equivalent to 20 gauge steel.

EXPLOSION VENTING:

The 1990 Supplement to the Uniform Codes. Uniform Fire Code Sec. 79.104: Explosion venting, equivalent protection devices, suppression systems or a barricade shall be provided in accordance with Section 80.301(q) when Class I-A flammable liquids are stored in excess of the exempt amounts in Table No. 5-A of the Building Code, or where explosive vapor-air mixtures may develop under normal operating conditions.

Uniform Building Code. 1985. Sec. 910: Rooms used for dispensing of Class I-B liquids and rooms used for storage or dispensing of Class I-A liquids shall have roofs or walls designed to relieve internal explosion forces.

Uniform Building Code. 1988. Sec. 910: Explosion venting shall be provided to vent the gases resulting from deflagrations of dusts, gases or mists in rooms, buildings or other enclosures as required by the Fire Code so as to minimize structural or mechanical damage. Walls, floors and roofs separating a use from an explosion exposure shall be designed to resist a minimum internal pressure of 100 psf. Explosion venting shall be provided in exterior walls or roof only. The venting shall be designed to prevent serious structural damage and production of lethal projectiles. Vents shall relieve at a maximum internal pressure of 20 psf. Venting devices shall discharge vertically or directly to an unoccupied yard not less than 50 feet in width on the same lot. Releasing devices shall be so located that the discharge end shall be not less than 10 feet vertically and 20 feet horizontally from window openings or exits in the same or adjoining buildings or structures.

Uniform Fire Code. 1988. Sec. 80.301(q) - Explosion Venting or Suppression: Indoor storage areas and storage buildings shall be provided with explosion venting (note: required for toxic and highly toxic flammable gases, flammable solids (combustible dusts), Class III and IV oxidizers, Class I organic peroxides, pyrophorics, unstable (reactive) materials, and water-reactive materials). The

design shall be by competent persons and recognize the nature of the stored material and its likely behavior in an explosion. Walls, ceilings and roofs exposing another occupancy or use shall be designed to resist a minimum internal pressure of 100 psf. Explosion venting shall be only in exterior walls, roofs or through specially designed shafts to the exterior of the building. Venting shall be designed to prevent serious structural damage and the production of lethal projectiles. Vents shall be designed to relieve at a maximum internal pressure of 20 psf and shall discharge directly to the open air or to an unoccupied space not less than 50 feet in width on the same lot. Relieving devices shall be so located that the discharge end shall be not less than 10 feet vertically and 20 feet horizontally from window openings or exits in the same or adjoining buildings or structures.

Uniform Fire Code, 1988, Sec. 80.402(b)(2)(D) and Sec. 80.402(b)(3)(D) - (Explosion venting or suppression): Explosion venting or suppression shall be provided.....when an explosive environment can occur because of the characteristics or nature of the hazardous materials dispensed or used, or as a result of the dispensing or use process.

National Fire Protection Association (NFPA) 30, 1987, Sec. 4-4.2.1 (Cutoff Rooms and Attached Buildings): .....Where Class IA or IB liquids are dispensed, or where Class IA liquids are stored in containers larger than one gallon, the exterior wall or roof construction shall be designed to include explosion-venting features, such as lightweight wall assemblies, lightweight roof assemblies, roof hatches, or windows of the explosion-venting type.

National Fire Protection Association (NFPA) 30, 1987, Sec. 5-3.2.7: Areas where Class IA or unstable liquids are processed shall have explosion venting through one or more of the following methods: (a) open air construction; (b) lightweight walls and/or roof; (c) lightweight wall panels and roof hatches; (d) windows of explosion-venting type.

FIRE SUPPRESSION SYSTEMS

Uniform Building Code, 1988, Sec. 3802(f): An automatic fire-extinguishing system shall be installed in Group H, Divisions 1,2,3 and 7 Occupancies.

Uniform Fire Code, 1988, Sec. 10.306(f): An automatic fire-extinguishing system shall be installed in Group H, Divisions 1,2,3 and 7 Occupancies.

Uniform Fire Code, 1988, Sec. 79.203(a): Liquid Storage Rooms shall be protected by automatic sprinkler systems.

Uniform Fire Code, 1988, Sec. 79.204(b): Liquid Storage Warehouses shall be protected by automatic sprinkler systems.

Uniform Fire Code, 1988, Sec. 79.804(1) - Inside Use, Dispensing and Mixing Room: An automatic sprinkler system shall be provided and shall be designed and installed in an approved manner for extrahazardous locations.

Uniform Fire Code, 1988, Sec. 80.301(e) - Fire Extinguishing Systems for Hazardous Materials Storage: Indoor storage areas and storage buildings shall be protected by an automatic sprinkler system. Approved alternate automatic fire-extinguishing systems may be used.

Uniform Fire Code, 1988, Sec. 80.401(r) - Fire Extinguishing Systems for Dispensing, Use and Handling of Hazardous Materials: Indoor rooms or areas in which hazardous materials are dispensed or used shall be protected by an automatic fire-extinguishing system. Approved alternate automatic fire-extinguishing systems may be used.

Uniform Building Code Standards, 1988, U.B.C. Standard No. 38-1, Sec. 38.104(a): The design and installation of automatic fire sprinkler systems required by the Building Code shall comply with the Building Code, this standard and other nationally recognized standards for the design and installation of automatic sprinkler systems, such as NFPA 13.

The BOCA National Building Code, 1987, Sec. 1002.7 - Use Group H: Fire Suppression Systems shall be installed and maintained in full operating condition in all buildings or structures or portions thereof of Use Group H (High Hazard).

The BOCA National Building Code, 1987, Sec. 1004.1: Water spinkler extinguishing systems shall be of an approved type and installed in accordance with the provisions of this code and NFPA 13.

The BOCA National Building Code, 1987, Sec. 1008.1: Carbon dioxide extinguishing systems shall be of an approved type and installed in accordance with the provisions of this code and NFPA 12.

The BOCA National Building Code, 1987, Sec. 1009.1: Halogenated fire extinguishing systems shall be installed in accordance with

the provisions of this code and NFPA 12A and 12B.

The BOCA National Building Code, 1987, Sec. 1010.1: Dry chemical extinguishing systems shall be of an approved type and installed in accordance with the provisions of this code and NFPA 17.

Standard Building Code, 1988, Sec. 408.2.5: In all buildings of Group H occupancy, approved automatic sprinklers shall be installed throughout, except that where the nature of the fire hazard is such that application of water is not effective as a means of protection, other approved means of protection shall be provided.

Standard Fire Prevention Code, 1988, Sec. 603.8.1: All fire extinguishing systems shall be installed in accordance with the requirements of the applicable NFPA standard.

ELECTRICAL:

Uniform Fire Code, 1988, Sec. 79.804(2) - Inside Use, Dispensing and Mixing Room: Electrical wiring and equipment located in inside storage rooms shall be approved for Class I, Division 1 hazardous locations in accordance with the Electrical Code.

Uniform Fire Code, 1988, Sec. 80.401(j) - Dispensing, Use and Handling Hazardous Materials: Electrical equipment and wiring in dispensing and use areas shall be installed in accordance with the provisions of the Electrical Code.

National Fire Protection Association (NFPA) 30, 1987, Sec. 4-4.1.5: Electrical wiring and equipment located in inside rooms used for Class I liquids shall be suitable for Class I, Division 2 classified locations; for Class II and Class III liquids, shall be suitable for general use.

National Fire Protection Association (NFPA) 30, 1987, Sec. 4-4.2.11: In rooms where Class I liquids is permitted, electrical systems shall comply with 4-4.1.5, except that within 3 ft. of the dispensing nozzle area, the electrical system shall be suitable for Class I, Division 1.

Standard Fire Prevention Code, 1988, Sec. 904.5.5 - Inside Storage Rooms: Electrical Wiring and equipment located in inside storage and handling rooms shall be approved for Class I, Division 1 hazardous locations in accordance with the Electrical Code.

Title 29, Code of Federal Regulations (OSHA), 1988, Sec. 1910.105 (d)(4)(iii) - Wiring, Inside Storage Rooms: Electrical wiring and equipment located in inside storage rooms used for Class I liquids shall be approved for Class I, Division 2 Hazardous Locations; for Class II and Class III liquids, shall be approved for general use.

SECURITY:

Uniform Fire Code, 1988, Sec. 79.406: The storage area shall be protected against tampering or trespassers.

Uniform Fire Code, 1988, Sec. 80.301(e) - Security: The storage of hazardous materials shall be safeguarded with such protective facilities as public safety requires.

National Fire Protection Association (NFPA) 30, 1987, Sec. 4-8.4: The storage area shall be protected against tampering or trespassers.

Title 29, Code of Federal Regulations (OSHA), 1988, Sec. 1910.105 (d)(6)(iv): The storage area shall be protected against tampering or trespassers.

Title 22, California Administrative Code, Chapter 30, Sec. 66265 (f): Storage of hazardous waste shall be in a secure enclosure, including but not limited to, a building, room or fenced area, which shall prevent unauthorized access to the waste and in such a manner that will minimize the possibility of spills and escape from the area.

1.0 BUILDING STRUCTURAL AND CODE COMPLIANCE

1.1 General

Safety Storage, Inc. Models 44, 30 and 14 are Factory Mutual System (FM) Approved, #J.1.2R3A1.AF; Models 22, 15 and 7 Approval, #J.1.1N7A8.AF and #J.1.2P9A8.AF; Models 60, 10 and 6 Approval, 2V4A6.AF. All buildings utilize UL listed components. All buildings are designed and analyzed by professional engineers (P.E.). The analysis is performed in accordance with Uniform Building Code (UBC), Building Officials and Code Administrators (BOCA), National Building Code (NBC), and the Southern Building Code (SBC).

1.1.1 Fire Rated Buildings

1.1.1.1 Wall Construction: 2-Hour Fire Rated per UL U-425 consisting of two (2) layers of lapped, taped, and coated 5/8" Type X Gypsum wallboard on the interior and exterior of 18 ga. corrosion protected steel studs, interior and exterior covered with 18 ga. corrosion protected steel sheet.

1.1.1.2 Ceiling Construction: Same as wall construction with substitution of 18 ga. galvanized steel roof sheeting on exterior.

1.1.1.3 Doors: UL Listed 3-hr. fire rated double doors and frame, 60 inches wide (standard) with exterior security lock and interior safety release latch.

1.1.1.4 Spill Containment Sump: 10 ga. steel floor, continuously welded at perimeter; 10 ga. steel sump walls, 2-hr. fire rated meets UL U-425.

1.1.1.5 Sub-Floor: Building supported on C4 x 5.4 channels on approximately 24" centers welded to sump floor; all joints caulked for corrosion protection.

1.1.2 Non-Combustible Steel Buildings

1.1.2.1 Wall Construction: 10 ga. steel sheet with 10 ga. steel formed studs continuously welded.

1.1.2.2 Roof Construction: 12 ga. steel sheet welded to 10 ga. steel formed purlins on 30" centers.

1.1.2.3 Doors: 54" x 81" door opening; 12 ga. steel sheet with three-point latching mechanism and perimeter weather seal.

1.1.2.4 Spill Containment Sump: 10 ga. steel floor continuously welded at perimeter to 10 ga. walls.

1.1.2.5 Sub-Floor: Building supported on C4 x 5.4 channels on approximately 24" centers welded to sump floor; all joints caulked for corrosion protection.

1.1.3 Explosion Relief Construction

Models with explosion relief construction are designed to withstand pressure and vent gases generated in case of explosion inside the building. Structural accommodations include reduced stud and purlin spacing and inclusion of explosion vent panels. Standard open vent area is 1 $ft.^2$ per 50 $ft.^3$ volume. Meets FM LPDS 1-44, NFPA 68, UBC 910.

1.2 Design Loads

The following are the design load ratings of our non-combustible steel and fire rated models including models with explosion-relief construction.

1.2.1 Steel, Non-Combustible Building

1.2.1.1 Snow Load: 40 psf, per UBC 2305, BOCA 1111.0, SBC 1204.

1.2.1.2 Wind Speed Exposure: 100 mph exposure "C", 30 psf, per UBC 2311, BOCA 1112.0, SBC 1205.

1.2.1.3 Seismic Condition: Zone 4, per UBC 2312, BOCA 1113.0, SBC 1206.

1.2.1.4 Door Load: 25 psf

1.2.1.5 Floor Load: 250 psf

1.2.1.6 Sump Load: 250 psf

1.2.1.7 Explosion-Relief Construction: Per UBC 910, Factory Mutual LPDS, 1-44, NFPA 68.

1.2.1.7.1 Walls, roof and floor: 100 psf

1.2.1.7.2 Explosion-Relief Panels: 20 psf

1.2.2 Fire Rated Building

1.2.2.1 Snow Load: 40 psf, per UBC 2305, BOCA 1111.0, SBC 1204.

1.2.2.2 Wind Speed Exposure: 110 mph exposure "C", 30 psf, per UBC 2311, BOCA 1112.0, SBC 1205.

1.2.2.3 Seismic Condition: Zone 4, per UBC 2312, BOCA 1113.0, SBC 1206.

1.2.2.4 Door Load: 25 psf

1.2.2.5 Floor Load: 250 psf

1.2.2.6 Sump Load: 250 psf

1.2.2.7 Explosion Relief Construction: Per UBC 910, Factory Mutual System Loss Prevention Data Sheet, 1-44, NFPA 68.

1.2.2.7.1 Walls, Roof and Floor: 100 psf

1.2.2.7.2 Explosion Relief Panels: 20 psf

1.3 Applicable Standards

1.3.1 Steel

- ASTM A36, Specification for Structural Steel
- ASTM A569, Specification for Steel, Carbon, Hot-Rolled Sheet and Strip, Commercial Quality

1.3.2 American Institute of Steel Construction (AISC) Specification for Accepted Practices in Steel Construction.

1.3.3 American Welding Society (AWS) Specification for Accepted Welding Practices.

1.3.4 National Fire Protection Association (NFPA).

- NFPA 13, Installation of Sprinkler Systems
- NFPA 17, Dry Chemical Extinguishing Systems
- NFPA 30, Flammable and Combustible Liquids Code
- NFPA 68, Venting of Deflagrations
- NFPA 70, National Electrical Code
- NFPA 80, Fire Doors and Windows
- NFPA 91, Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying

1.3.5 Factory Mutual System (FM).

1.3.6 Steel Structures Painting Council (SSPC) governs surface preparation and coating of steel.

2.0 FLOORING SYSTEM

2.1 Fiberglass Grating (Standard)

Pultruded T-Bar, Fire Retardant, Isopthalic Polyester Resin System. Color: Gray (Yellow Optional).

2.1.1 Meets ANSI 2.5.

2.1.2 Corrosion resistant to most chemicals. Chemical resistance chart available.

2.1.3 Weather and UV resistant.

2.1.4 Fire retardant meets ASTM E-84, ASTM D-635, Class A flame spread rating of 25 or less; self extinguishing.

2.1.5 18% open area.

2.1.6 3.0 lbs. per sq. ft.

2.1.7 Anti-skid surface.

2.1.8 Maximum concentrated load: 800 lbs. Maximum uniform distributed load: 250 lbs. per sq. ft.

2.2 Plywood (Optional)

Fire Retardant Gray; Epoxy Coated.

2.2.1 Meets ASTM D3201; 25% or less moisture content.

2.2.2 Corrosion resistant meets MIL-L-19140E, Paragraph 4.6.5.2.

2.2.3 Weather resistant.

2.2.4 1" diameter hole on 12" centers.

2.2.5 Anti-skid surface.

2.2.6 Class A flame spread rating of 25 or less.

2.2.7 Maximum concentrated load: 600 lbs. Maximum uniform distributed load: 400 psf

2.3 Steel Grating (Optional)

Can be provided for extreme load conditions.

3.0 PAINT AND COATING SYSTEMS

3.1 Exterior

Two coat system consisting of 5 mils DFT high solids epoxy undercoat with 3 mils DFT aliphatic polyurethane topcoat.

3.1.1 White reflective high gloss finish.

3.1.2 Impact resistant at 5 mils to 140 in-lbs. per ASTM D2794.

3.1.3 UV resistant

3.2 Interior

Two coats, 5 mils DFT high solids epoxy.

3.2.1 Off-white semi-gloss finish.

3.2.2 Resists high humidity and moisture.

3.2.3 Chemical resistant.

3.2.4 Meets ASTM D2697 modified.

3.3 Coatings

Sump is coated with two coats 5 mils DFT high solids epoxy. Can be coated with optional highly chemical resistant high tensile polyurethane at 60 mils DFT.

4.0 ELECTRICAL SYSTEMS

4.1 General

All Safety Storage electrical systems utilize rigid 1/2" conduit, with explosion proof conduit seals (interior), sealed fittings and receptacles. Breaker, relay boxes, and switches (NEMA 7) located on right end wall. All enclosures are NEMA 3R raintight. NEMA 7 enclosures available for use in hazardous locations.

4.2 Lighting

Standard lighting is incandescent explosion proof fixtures suitable for indoor or outdoor use.

4.2.1 Approved for use in Class I, Division 1 & 2, Groups C and D.

4.2.2 150 watt lamp (standard). Available in 100 - 500 watts.

4.2.3 120 V single phase.

4.2.4 Cast of corrosion resistant aluminum alloy (less than .4% copper).

4.2.5 Heat and impact resistant pre-stressed globe.

4.3 Ventilation

Consists of explosion-proof blower and heavy gauge steel ducting with optional manual damper for air flow control.

4.3.1 UL Listed Class I, Division 1 & 2, Groups C and D, totally enclosed explosion-proof motor with non-static cast aluminum fan blade. 120 V single phase.

4.3.2 Ducting constructed of 12 ga. steel, epoxy-coated inside and out with interior exhaust vents. Air is exhausted at a maximum of 12" from floor surface.

4.4 Temperature Control Systems

Models with temperature control systems are constructed with walls, ceilings, doors and subfloors fully insulated and can be equipped with heating systems, cooling systems, both heating and cooling, and refrigeration systems.

4.4.1 Insulation

Provides either R-11 for heating and/or cooling, or R-27 for refrigeration.

4.4.2 Heaters

Convention type, 12,000 (3600 W) or 26,000 BTU (7600 W).

4.4.2.1 Class I, Division 1 & 2, Group D (Explosion-Proof).

4.4.2.2 Two heating elements, 208V, 17.4 amp (standard); 240V, 15 amp; or 480V, 7.5 amp (optional); all single phase.

4.4.2.3 500F (260C) auto-ignition temperature.

4.4.3 Air Conditioners

19,000 BTU or 31,000 BTU

4.4.3.1 Class I, Division 1 (interior), Groups C and D.

4.4.3.2 208/230V, single phase.

4.4.3.3 Draws 9.0 amps (19,000 BTU); 23.7 amps (31,000 BTU).

4.4.4 Refrigeration

Consists of evaporator mounted inside the building on an end wall and a condensing unit mounted external; 2, 3, or 5 hp units available.

4.4.4.1 All units have full hermetic compressor using R-22 refrigerant.

4.4.4.2 2 hp (19,200 BTU @ 90F ambient with a suction temperature of +25F). Unit utilizes 230V, single phase, drawing 18.1 amps.

4.4.4.3 3 hp (31,500 BTU @ 90F ambient with suction temperature of +25F). Unit utilizes 230V, three phase, drawing 18.1 amps.

4.4.4.4 5 hp (42,500 BTU @ 90F with suction temperature of +25F). Unit utilizes 230V, three phase, drawing 23.6 amps.

4.5 Leak Detection System - Liquid Level Detector

A single point level switch consisting of two components, a sensor and a controller. The controller includes a 10 amp SPDT relay, the output of which can be used to activate external alarms. The switch is an ultrasonic device utilizing piezo-electric crystals to sense the presence of liquid between a transmitter and a receiver.

4.5.1 120V, single phase, 60 hz.

4.5.2 Explosion proof, NEMA 7, epoxy painted cast aluminum housing.

4.5.3 Operating temperatures: 40F to 160F.

5.0 FIRE SUPPRESSION SYSTEMS

5.1 General

Two pre-engineered ANSUL dry chemical fire suppression systems are offered: the SPA-50 and the LTA-101-30. Both systems are automatic and meet NFPA 17. The SPA-50 is used on Models 44, 22, 30 and 15. The LTA-101-30 is used on Models 14, 7, 10 and 6. Both are UL and FM Approved for Class A, B and C fires. Systems must be charged prior to use by a certified ANSUL representative.

5.1.1 SPA-50

5.1.1.1 120V automatic audible alarm that sounds when system discharges.

5.1.1.2 Remote emergency mechanical pull station.

5.1.1.3 Dry contacts for remote annunciation.

5.1.1.4 50 lb. Foray dry chemical agent stored in bottle at 360 psi.

5.1.1.5 Meets ASTM and DOT pressure vessel requirements.

5.1.1.6 UL rated at -65F to 120F operating temperature range.

5.1.1.7 Triggered by melt of fusible link pre-set at 165F.

5.1.2 LTA-101-30

Same as SPA-50, except the dry chemical agent is not pre-charged. Agent dispense is activated by a large pressurized gas cylinder expellant cartridge containing N_2 at 1800 psi.

6.0 PERSONNEL SAFETY DEVICES

6.1 General

Two different types of eye/face washes are offered as an option in all buildings to meet OSHA requirements for personnel safety in case of emergency. One is a portable self-contained eye/face wash unit. The other is a permanently mounted combination eye/face wash and shower.

6.1.1 Portable Unit

6.1.1.1 10 gallons of usable water.

6.1.1.2 304 stainless steel, 25" high x 12-1/4" diameter with carrying handles and cushioned base.

6.1.1.3 Stay open, chrome plate brass, self draining, 1/2" ball valve is activated by stainless steel push plate.

6.1.1.4 Flow regulator provides constant flow at .4 gpm for 15 minutes.

6.1.1.5 Safe operating temperature range of 40F to 120F.

6.1.2 Combination Shower/Eye/Face Unit

6.1.2.1 Shower head delivers 20" diameter flood at 60" from floor.

6.1.2.2 Stainless steel pull rod activates stay open, 1-1/4" ball valve.

6.1.2.3 Eye/face wash has dual stream head with float off covers.

6.1.2.4 Self-adjusting flow regulator delivers 7 gpm at shower and 3 gpm at eye/face wash.

6.1.2.5 Heavy wall schedule 80 hot dipped galvanized piping, 1-1/4" NPT.

6.1.2.6 Safe operating temperature range, 40F to 120F.

The Refrigeration Systems used by Safety Storage Inc. functions on two main components which are the condensor and evaporator units. Specifications are as follows:

Evaporator Component: Installed in side wall similar to window A/C

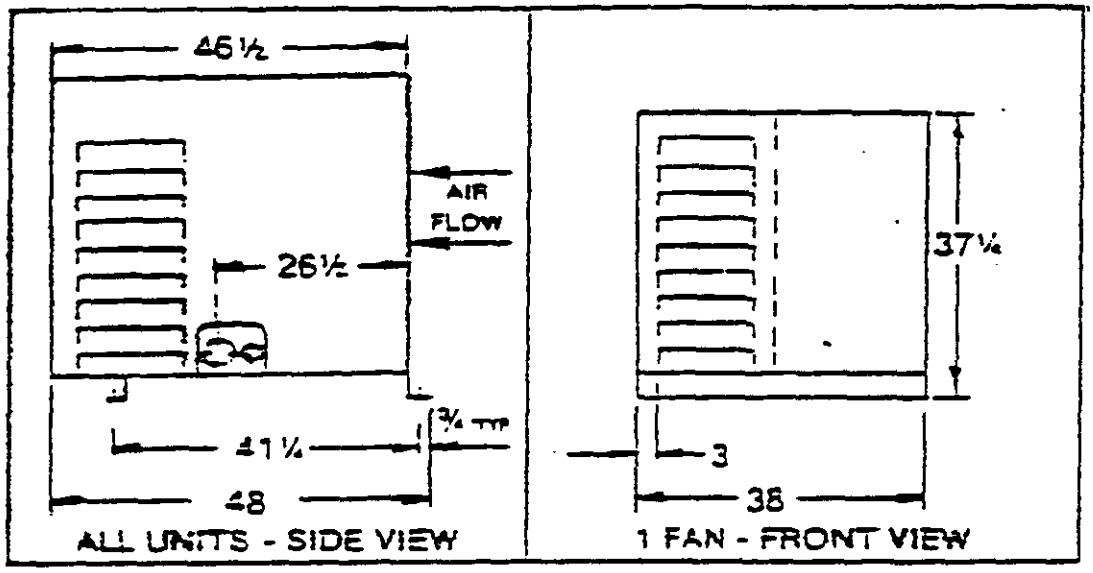
- 1/3 hp General Electric explosion proof fan motor with an electrical rating of 115/230 Volts, single phase 6.2/3.1 amps
- Blower blade on 2 and 3 hp units is a 16", 23° CCW
- Blower blade on 5 hp unit is a 16", 27° CCW
- Coil: copper tube aluminum finned
- On/Off system switch on inside face of unit

Condensing unit: A free standing unit located a small distance away from bldg. The units housing is weather tight.

- 2 hp unit has a full hermetic compressor using R-22 refrigerant. Electrical: 230V, single phase with total amperage of 18.1 amps. Capacities (BTUH): 19,200 btu at 90° F ambient, and a *suction temperature of +25° F.
- 3 hp unit has a full hermetic compressor using R-22 refrigerant. Electrical: 230V, three phase with total amperage of 18.1 amps. Capacities (BTUH): 31,500 btu at 90° F ambient, and a *suction temperature of +25° F.
- 5 hp unit has a semi hermetic compressor using R-22 refrigerant. Electrical: 230V, three phase with total amperage of 23.6 amps. Capacities (BTUH): 42,500 btu at 100° F ambient, and a *suction temperature of +25° F.
- Interlock relay, plug in type 115 V, 17 amp, 8 pin, double pole double throw.

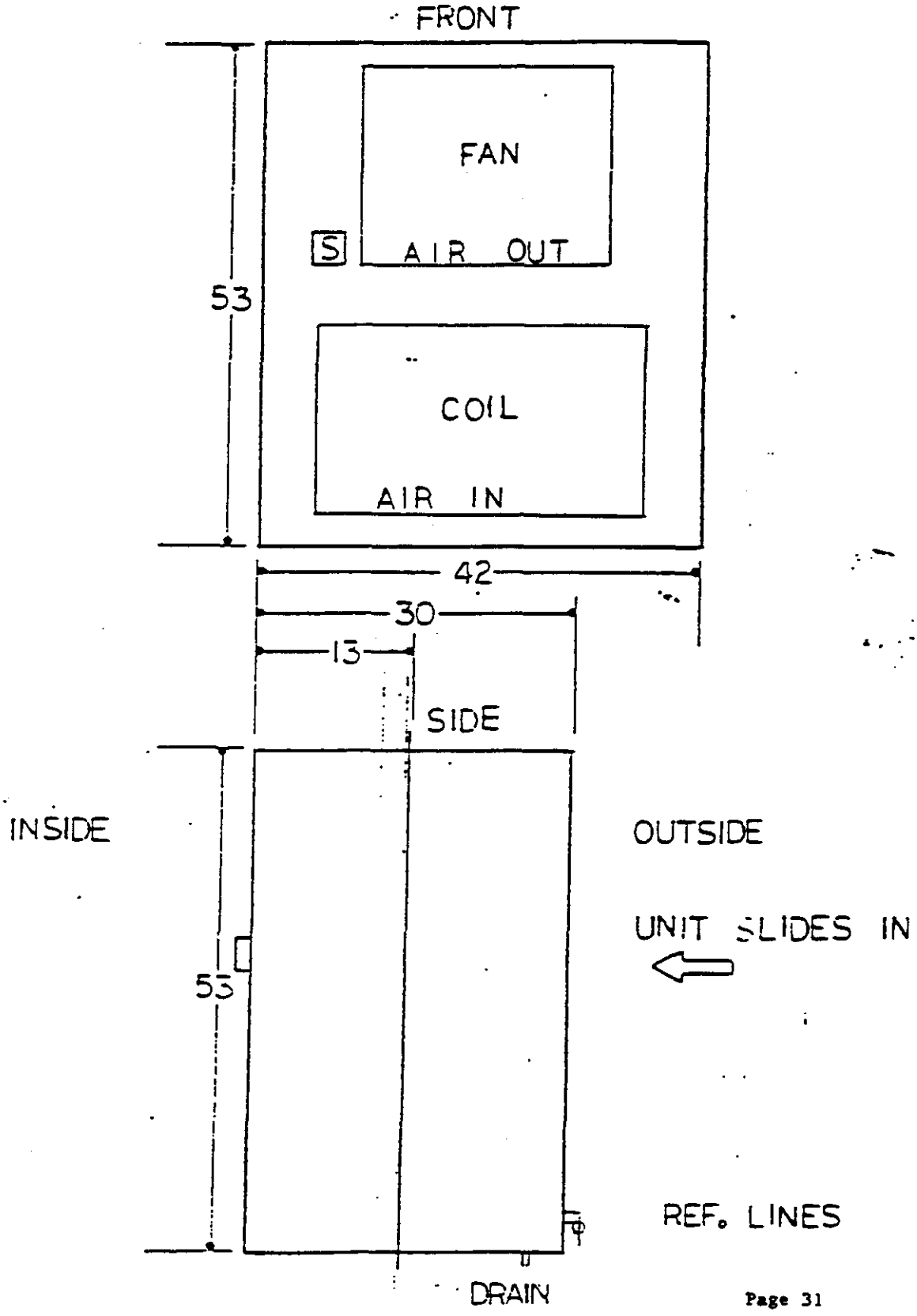
Condensor unit to evaporator piping is extruded teflon tube with stainless steel single wire braid with aeroquip fittings.

*Suction temperature is defined as, "The temperature of refrigerant in the evaporator."



CONDENSING UNIT

EVAPORATOR SECTION

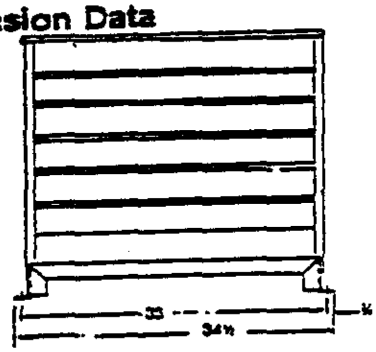


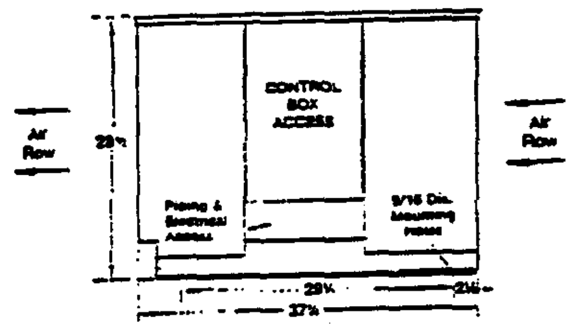
90°F Ambient*

REF.	MODEL RE/RC/RE	HP	COMPRESSOR	SUCTION TEMPERATURE +45	+35	+25	+20	+10	0	-5	-10	-20	-30	-40
R-12	¾-H12	¾	KAM-0075	10,400	8,530	6,890	6,180	4,800	3,640	—	—	—	—	—
	1-H12	1	KAJ-0100	12,800	10,800	8,620	7,730	6,140	4,730	—	—	—	—	—
	1-M12	1	KAK-0100	—	—	9,880	8,880	7,130	5,620	4,880	—	—	—	—
	1½-H12	1½	KAL-0150	19,400	16,000	13,100	11,800	9,200	7,130	—	—	—	—	—
	1½-M12	1½	KAT-0150	—	—	16,000	13,800	10,700	8,420	7,440	—	—	—	—
	2-H12	2	EAV-0200	25,800	21,800	17,900	16,000	12,800	9,800	—	—	—	—	—
	2-M12	2	EAL-0200	—	—	20,300	18,200	14,400	11,200	8,870	—	—	—	—
	3-H12	3	LAH-0310	38,800	32,800	27,300	24,800	19,700	15,500	—	—	—	—	—
	3-M12	3	LAC-0310	—	—	29,900	26,800	21,800	17,900	16,300	—	—	—	—
R-22	1½-C22	1½	CRC-0175	25,300	20,300	15,800	13,800	10,000	7,180	—	—	—	—	—
	2-C22	2	CRE-0225	31,000	24,700	19,200	16,800	12,300	8,720	—	—	—	—	—
	3-C22	3	CRK-0325	46,300	38,700	31,800	28,100	21,800	16,700	—	—	—	—	—
	3-H22	3	ERF-0310	40,500	33,300	27,000	24,000	18,900	14,800	—	—	—	—	—
R-502	¾-L52	¾	KAM-0075	—	—	—	—	—	—	5,510	4,850	3,880	2,720	1,860
	1-L52	1	KAJ-0100	—	—	—	—	—	—	7,120	6,300	4,840	3,590	2,580
	1½-L52	1½	KAL-0150	—	—	—	—	—	—	—	9,410	7,180	5,280	4,000
	2-L52	2	EAV-0200	—	—	—	—	—	—	14,400	12,800	10,000	7,880	6,740
	3-L52	3	LAH-0310	—	—	—	—	—	—	22,800	18,500	14,800	10,300	7,300

*Raise (lower) capacities 6% for each 10°F decrease (increase) in ambient temperature.

Dimension Data





Electrical Specifications

Nominal H.P.	Operating Range	Unit Model Refrigerant R-12	R-22	R-502	Compressor	Connections Liquid OD	Suction OD	RCSR Cap # 90% Full	230/1/60 Comp. RLA	LRA	Cond. FLA	230/3/60 Comp. RLA	LRA	Cond. FLA
¾	L			¾-L52	KAM-0075	3/8	5/8	10	6.0	30.4	2.8	2.7	19.9	2.8
¾	H	¾-H12			KAM-0075	3/8	5/8	11	6.0	30.4	2.8	2.7	19.9	2.9
1	L			1-L52	KAJ-0100	3/8	5/8	10	6.4	33.5	2.8	3.4	25.0	2.8
1	M	1-M12			KAK-0100	3/8	5/8	11	6.4	33.5	2.8	3.3	25.0	2.8
1	H	1-H12			KAJ-0100	3/8	5/8	11	6.4	33.5	2.8	3.4	25.0	2.9
1½	L			1½-L52	KAL-0150	3/8	7/8	10	5.8	44.0	2.8	5.4	35.5	2.8
1½	M	1½-M12			KAT-0150	3/8	7/8	11	6.1	44.0	2.8	6.0	35.5	2.8
1½	H	1½-H12			KAL-0150	3/8	7/8	11	5.8	44.0	2.8	5.4	35.5	2.9
2	L			2-L52	EAV-0200	3/8	7/8	16	10.0	58.0	2.8	8.8	48.0	2.8
2	M	2-M12			EAL-0200	3/8	7/8	17.5	8.7	58.0	2.8	7.1	48.0	2.8
2	H	2-H12			EAV-0200	3/8	7/8	17.5	10.0	58.0	2.8	8.8	48.0	2.8
1½	H		1½-C22		CRC-0175	3/8	5/8	16	12.9	54.0	2.8	—	—	—
2	H		2-C22		CRE-0225	3/8	5/8	16	16.3	65.0	2.8	—	—	—
3	H		3-C22		CRK-0325	1/2	7/8	16	23.9	95.4	2.8	16.3	82	2.8
3	H		3-H22		ERF-0310	1/2	7/8	16	17.0	88.0	2.8	11.7	82	2.8
3	L			3-L52	LAH-0310	1/2	1⅛	16	15.1	88.0	2.8	10.7	82	2.9
3	M	3-M12			LAC-0310	1/2	1⅛	17.5	16.4	88.0	2.8	10.0	82	2.9
3	H	3-H12			LAH-0310	1/2	1⅛	17.5	15.1	88.0	2.8	10.7	82	2.8

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Russell

Russell Coil Company a subsidiary of ARDCO, INC.
221 South Berry Street/Brea, California 92621
(714) 529-1935/(213) 691-3246

Condensing Unit Capacities (BTUH)

Adjustable Shelving

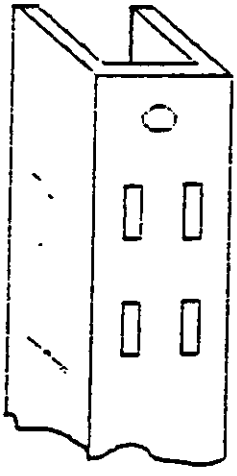
Adjustable Shelving used by Safety Storage Inc. utilizes double slotted standards with double brackets to provide strength and stability for heavy shelf loads. Standards and brackets are made of anodized chrome finished steel. Shelf adjustment is 1". Brackets have screw holes between blades for permanent fastening. Standards are installed with No. 10 flat head screws. Further specifications are as follows:

Standards:

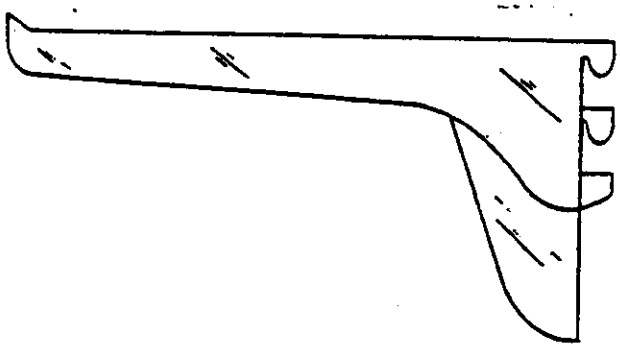
- 1-1/4" wide x 1/2" deep 16 Ga. steel
- Can be cut to length in order to customize application
- Are mounted vertically on 3 ft. centers for maximum load

Brackets:

- Made of 16 Ga. steel
- Are available for 14" and 15" shelving



Standard w/ double slot



Bracket w/ double insert

III) WORKMANSHIP

A) STEEL FABRICATION

All steel used in building fabrication is new prime structural steel free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. All steel is fabricated in accordance with the AISC "Specification for the Design, Fabrication and Erection of Structural steel for buildings." No manufacturing processes shall reduce the strength of the steel to a value less than intended by the design. Each manufacturing process is done neatly and accurately, and all bends are made by controlled means to insure uniformity of size and shape and shall comply with all applicable provisions of the AISC "Code of Standard Practice."

B) WELDING

Foreign matter which would be injurious to a weld are removed from all surfaces to be welded in the fabrication of all building models. The welding procedures employed by Safety Storage are in accordance with the filler metal specifications of the American Welding Society (AWS D1.1-81), and with the provisions of American Society for Testing Materials (ASTM). All welds are MIG and are of sufficient size and shape to develop the full design strength of the parts connected by the welds. Major structural welds are engineered and so specified so as to deliver fabrication strength as designed. These welds transmit the imposed stresses without permanent deformation or failure when subjected to proof or live loading conditions.

C) CLEANING AND PAINTING PREPARATION

Safety Storage uses cleaners, power abrasive grinders, chemical cleaners, and sandblasting to prepare metal surfaces prior to painting to ensure that they are free from oil, grease, slag, weld spatter, mill scales, products of corrosion, dirt, or foreign substances. The procedure is performed in accordance with the Steel Structures Painting Council (SSPC) Specification SSPC-SP 1, 2, 3, and 7.

D) PAINTING

All exposed interior metal surfaces are coated with chemical resistant epoxy paint. The exterior surface is gloss-white polyurethane.

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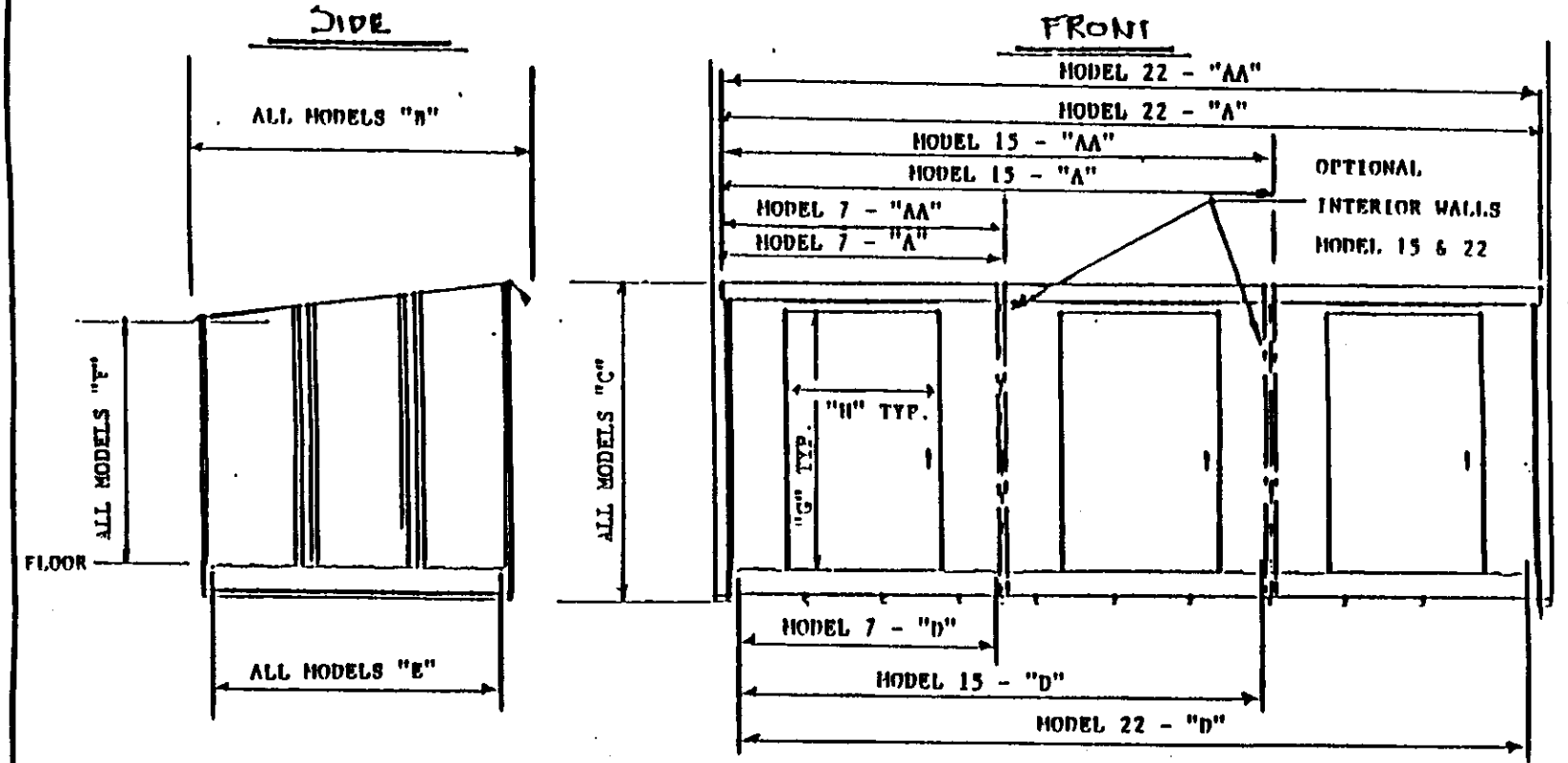
Your Safety Storage, Inc. hazardous material storage building is a engineered product designed and manufactured for a specific use. In order that you continue to receive the full, safe and reliable use of this building, Safety Storage, Inc. has compiled the following important information. It is mandatory that all personnel having access to your hazardous and flammable materials, and/or to this building, be adequately trained in the handling and use of your materials, and especially in the use, inspection and operation of your Safety Storage Inc. building and systems.

INSTALLATION AND MAINTENANCE



ELEVATIONS

Model	Outside Dimensions				Inside Dimensions			Weight (lbs)	Door Openings		Designed Stg. Capacity			Sump Capacity (Gal)
	A *	AA **	B	C	D	E	F		G	H	Wt. Lbs.	Sq.Ft.	Drums	
22	22'11-1/2"	22'0"	9'0-1/4"	8'7-1/2"	21'11-3/4"	8'0-3/8"	7'0-3/8"	8,000	8'9-3/4"	6'6"	44,000	176	34-40	750
15	15'7-1/2"	15'3-3/4"	9'0-1/4"	8'7-1/2"	14'7-1/2"	8'0-3/8"	7'0-3/8"	6,000	8'9-3/4"	6'6"	29,250	117	18-20	500
7	8'3-1/2"	7'11-5/8"	9'0-1/4"	8'7-1/2"	7'3-1/2"	6'0-3/8"	7'0-3/8"	3,500	8'9-3/4"	6'6"	14,500	58	8-12	250

*Outside hold-downs

** Roof overall

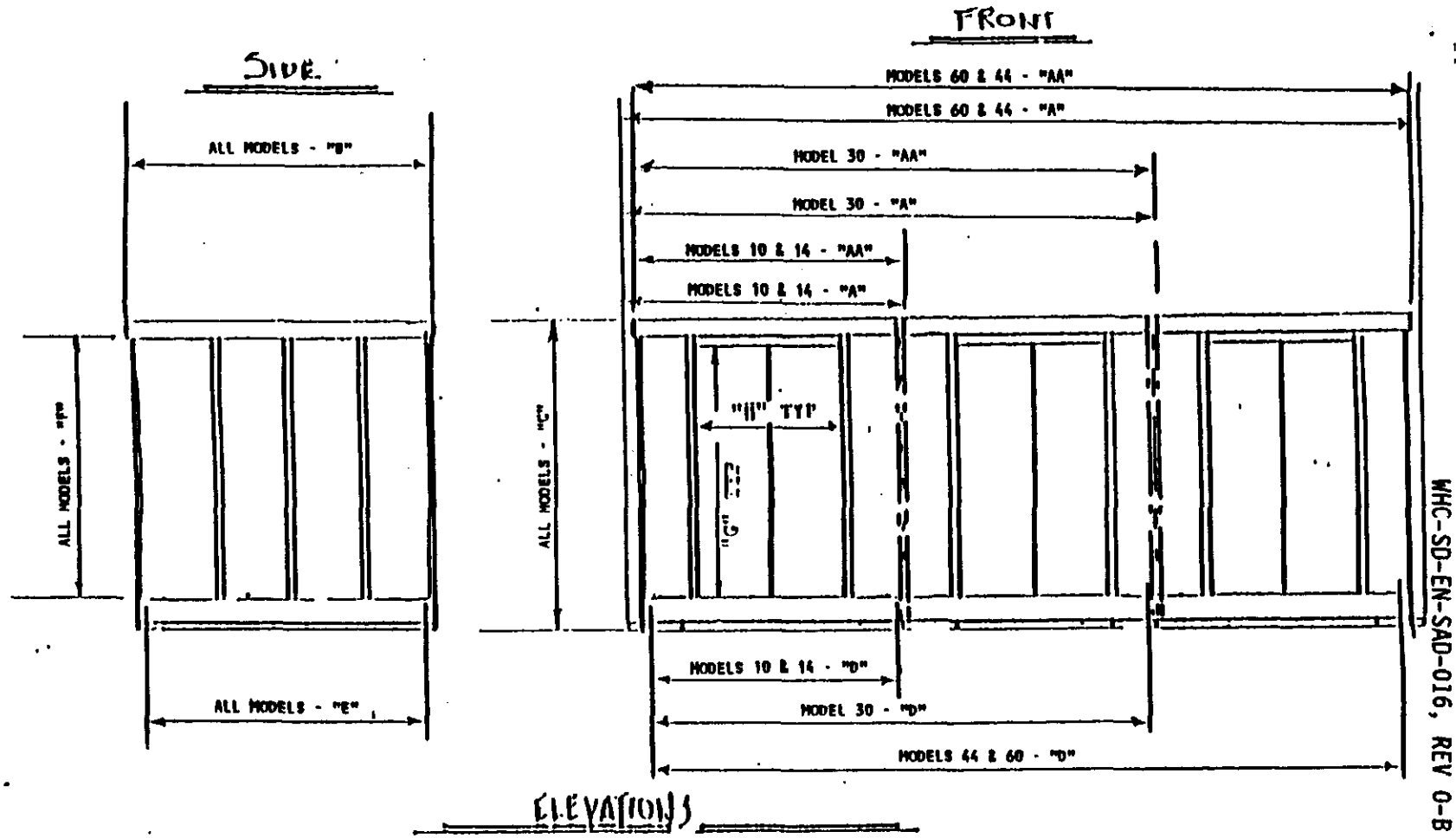
All Dimensions ± 1/2"

SAFETY STORAGE
2301 Best Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENACE MAN.

TITLE:

GENERAL DIMENSIONS



ELEVATIONS

MODEL	OUTSIDE DIMENSIONS				INSIDE DIMENSIONS			WEIGHT (LBS)	DOOR OPENINGS		DESIGNED STORAGE CAPACITY		SUMP CAPACITY (GAL)
	A*	AA*	B	C	D	E	F		G	H	(LBS)	DRUMS	
60	24'6-3/4"	24'1"	11'5-1/2"	8'9"	23'1"	10'5-1/2"	7'4"	21,000	6'7.3"	4'10.8"	60,250	55	975
44	23'6-1/2"	23'1"	9'3"	8'9"	21'11"	8'	7'4"	20,250	6'7.3"	4'10.8"	44,000	44	750
30	16'2-1/2"	15'9"	9'3"	8'9"	14'7"	8'	7'4"	15,250	6'7.3"	4'10.8"	29,250	28	500
14	8'10-3/4"	8'5-1/4"	9'3"	8'9"	14'7"	8'	7'4"	8,500	6'7.3"	4'10.8"	14,500	12	250
10	9'5-1/2"	9'	7'6"	7'10-1/2"	8'7/8"	6'5-3/8"	6'10-5/8"	5,500	6'8"	5'	13,000	12	125

* Outside hold-downs ** Roof overall All Dimensions +/- 1/2"

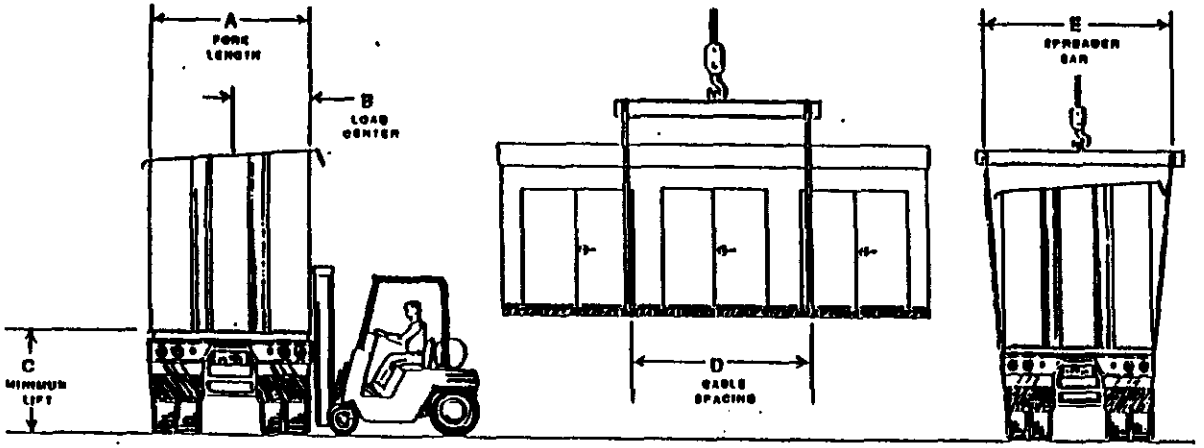
SAFETY STORAGE
2301 Bel Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENACE MAN.

GENERAL DIMENSIONS

WHC-SD-EN-SAD-016, REV 0-B

SAFETY STORAGE · OFF LOADING INSTRUCTIONS



OFF LOAD BY FORKLIFT OR CRANE

MODEL	*WEIGHT	A FORK LENGTH	B LOAD CENTER	C MINIMUM LIFT
2	850 TARE	4'	18"	6"
4	1500 TARE	6'	42"	6"
6	1800 TARE	6'	42"	6"
10	2600 TARE	8'	42"	6"
4P	2750	6'	40"	6"
7	5250	8'	54"	6"
15	8775	8'	54"	6"
22	16750	8'	54"	6"
6FR	4500	8'	42"	6"
10FR	6500	8'	48"	6"
14FR	7675	8'	56"	6"
30FR	13525	8'	56"	6"
7FS	8125	8'	58"	6"
15FS	13975	8'	58"	6"

* WEIGHT INCLUDES ALL STANDARD OPTIONS EXCEPT WHERE TARE IS INDICATED

OFF LOAD BY CRANE ONLY

MODEL	WEIGHT	D CABLE SPACING	E SPREADER BAR
24	17600	6'2"	13'
32	23325	10'10"	13'
44FR	19375	8'	11'6"
60FR	24975	8'6"	11'6"
22FS	24025	9'	13'
24FS	26575	8'10"	13'6"
32FS	36300	11'6"	13'6"
14FF	12300	2'10"	11'6"
30FF	21725	5'4"	11'6"
44FF	31125	8'	11'6"

CRANE LIFTING INSTRUCTIONS

- LIFT WITH CAPACITY APPROVED CABLE OR STRAPS
- USE SPREADER BARS A MINIMUM OF 2 FEET WIDER THAN BUILDING ROOF TO PREVENT DAMAGE TO FRONT AND REAR ROOF OVERHANG
- KEEP ONE END OF BUILDING TETHERED AT ALL TIMES TO PREVENT BUILDING FROM SWINGING IN AN UNCONTROLLABLE MANNER

WARNING

- **ELECTROCUTION HAZARD** CHECK OVERHEAD CLEARANCE BEFORE MOVING BUILDING. AREA MUST BE FREE OF OVERHEAD ELECTRICAL, PLUMBING OR OTHER POTENTIALLY HAZARDOUS OBJECTS.
- **DO NOT USE SPRING HOLD DOWN BRACKETS OR HOOKS ON ROOF FOR LIFTING** THESE ITEMS ARE FOR MANUFACTURING PURPOSES ONLY AND MUST NOT BE USED FOR LIFTING OR MOVING BUILDING AT ALL.
- **USE EXTREME CAUTION IN GUSTY OR HIGH WIND CONDITIONS** THE BUILDING IS UNSTABLE WHILE BEING LIFTED. INJURY OR DAMAGE TO EQUIPMENT MAY RESULT.
- **CUSTOMER MUST ASSURE THAT LIFTING EQUIPMENT IS CAPABLE OF SAFELY LIFTING AND MOVING BUILDING WEIGHT** WHEN FIGURING CAPACITY, NOTE LOAD CENTERS GIVEN ON CHART TO LEFT.
- **DO NOT DRAG OR SKID BUILDING AFTER PLACEMENT ON GROUND** PULLING BUILDING ON GROUND WITH FORKLIFT OR CRANE WILL INVALIDATE WARRANTY AND MAY DAMAGE STRUCTURE.

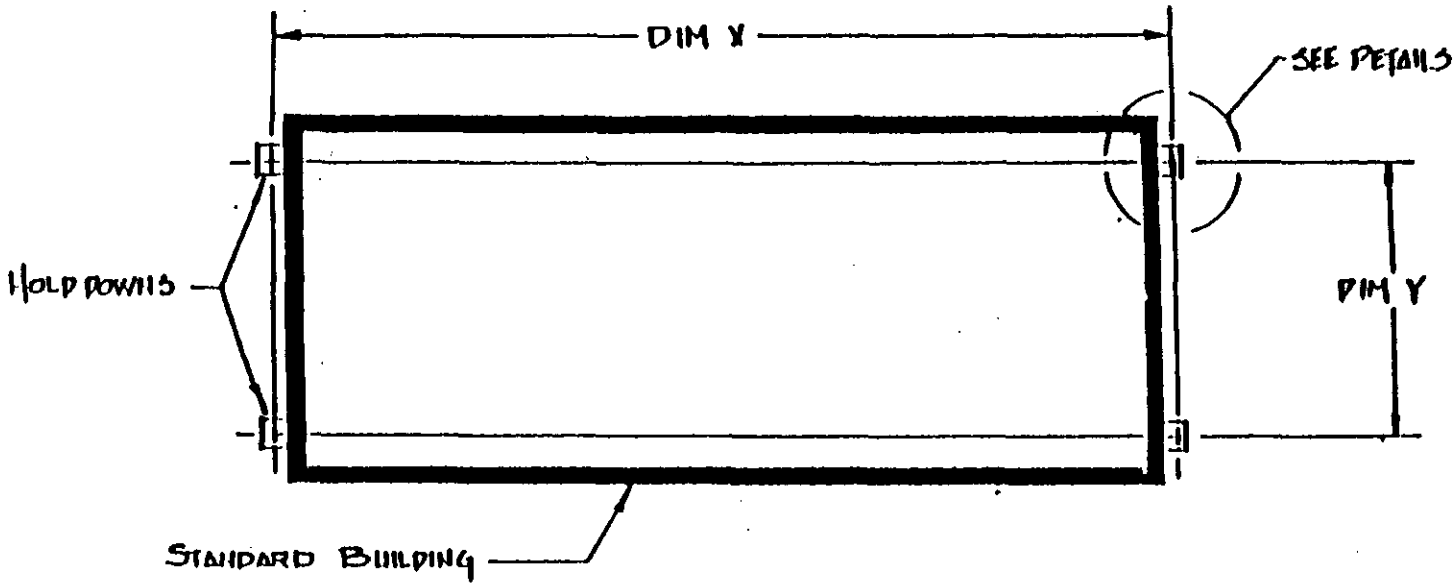
HAVE A QUESTION?

1 (800) 344-6539

CUSTOMER SERVICE • EXT.46

SAFETY STORAGE™

TO MAINTAIN WARRANTY ■ READ AND FOLLOW ALL OFF LOADING INSTRUCTIONS



MODEL No	DIM X	DIM Y
7	96"	95-1/8"
15	184"	95-1/8"
22	272"	95-1/8"

* DIM ± ½"

FOUNDATION/SLAB TYPE	APPROVED ANCHOR BOLTS - 1 EA CORNER				
	⅝"ø x 5" EMBED W/ NUT & WASHER PER ICBO #2196	⅝"ø x 5½" EMBED W/ NUT & WASHER PER ICBO #2391	⅝"ø x 6½" EMBED W/ NUT & WASHER PER ICBO #2196	1"ø x 6" EMBED W/ NUT & WASHER PER ICBO #2391	½"ø x 10" EMBED W/ 3" BOLT
	w/Special Inspection		w/o Special Inspection		
NEW REINFORCED CONCRETE PAD	◊	◊	◊	◊	◊
4" EXIST. REINFORCED CONC.	—	◊	—	—	—
5" EXIST. REINFORCED CONC.	◊	◊	—	—	—
6" OVER EXIST. CONC.	◊	◊	◊	◊	—
FOR A/C, ASPHALT OR OTHER EXISTING PAVEMENT	SEE DETAIL "OTHER PAVEMENT"				◊

◊ = OK TO USE

SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENANCE MANUAL:

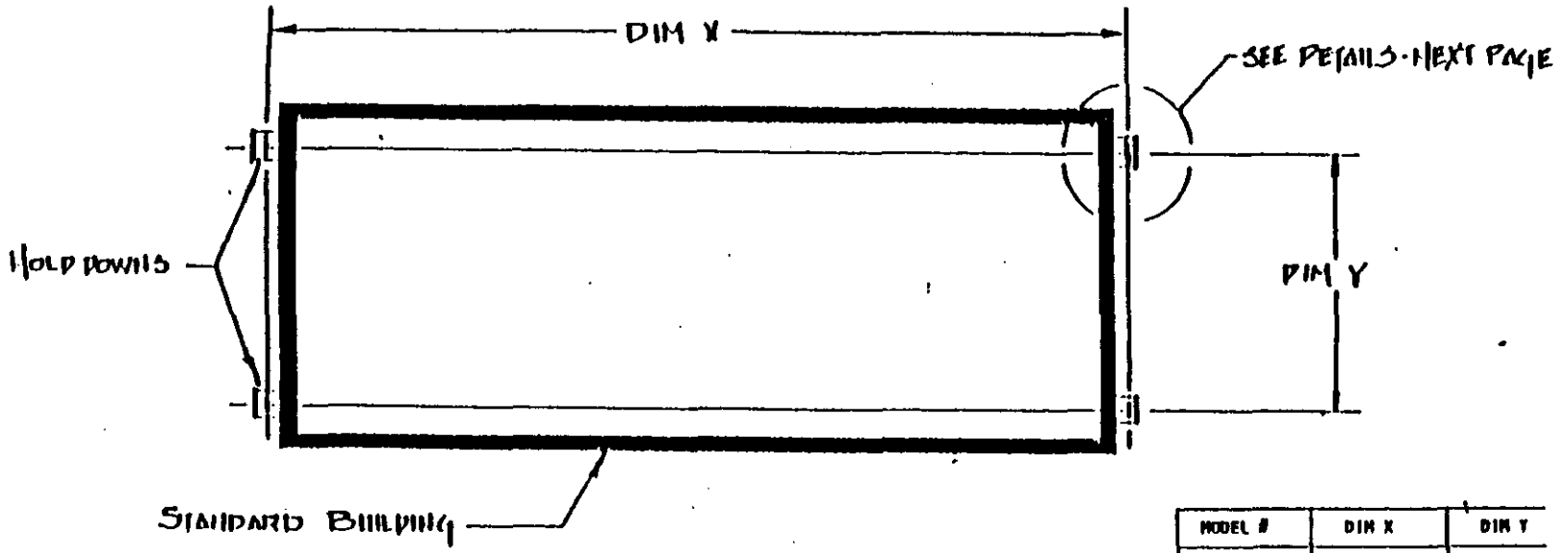
TITLE: STEEL BUILDINGS
HOLD-DOWN ANCHOR BOLTS
& LOCATIONS

WHC-SD-EN-SAD-016, REV 0-B

D-43

FORM AGEHND-4

EFFECTIVE DATE: 1/26/90



MODEL #	DIM X	DIM Y
60 FR	294-3/4"	120"
44 FR	279"	96"
30 FR	191"	96"
14 FR	103-1/4"	96"
10 FR	112"	78"

* DIM ± ½"

APPROVED ANCHOR BOLTS - 1 EA CORNER

FOUNDATION/SLAB TYPE	w/Special Inspection		w/o Special Inspection		
NEW REINFORCED CONCRETE PAD	✪	✪	✪	✪	✪
4" EXIST. REINFORCED CONC.	—	✪	—	—	—
5" EXIST. REINFORCED CONC.	✪	✪	—	—	—
6" OVER EXIST. CONC.	✪	✪	✪	✪	—
FOR A/C, ASPHALT OR OTHER EXISTING PAVEMENT	SEE DETAIL 'OVER PAVEMENT'				✪

✪ = OK TO USE

SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIRE RATED BUILDINGS;

HOLD-DOWN ANCHOR BOLTS & LOCATIONS

WHC-SD-EN-SAD-016, REV 0+B

D-44

FIELD MANUAL PG 41

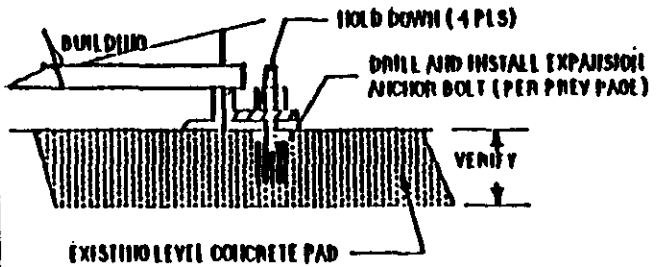
FORM ASFHHH1-1

EFFECTIVE DATE: 1/26/90

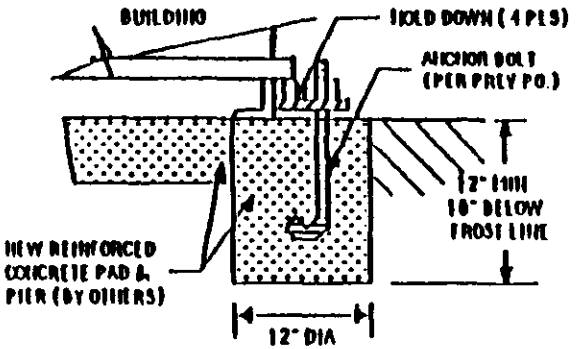
FOR EXISTING CONCRETE PAD, USE DETAIL "A"

FOR NEW PAD AND PIER, USE DETAIL "B"

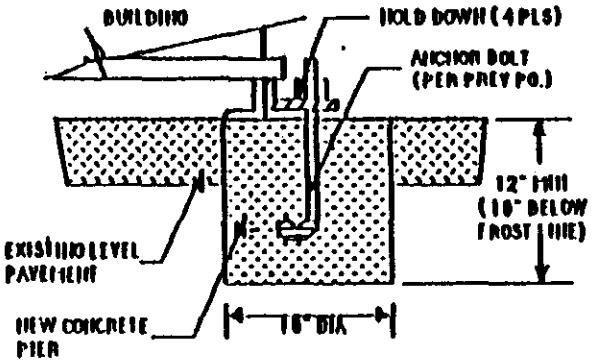
FOR NEW PIER IN OTHER THAN EXISTING CONCRETE PAD, USE DETAIL "C"



DETAIL "A"



DETAIL "B"



DETAIL "C"

------- CAUTION --------

BE SURE FOUNDATION PAD IS LEVEL. A 1° CHANGE IN ELEVATION ALONG THE LENGTH OF A MODEL 22 CAN REDUCE EFFECTIVE SPILL CONTAINMENT CAPACITY BY 16 GALLONS, AND CAUSE THE LIQUID LEVEL ALARM TO BE PREMATURELY ACTIVATED.

------- CAUTION --------

WINDS UNDER FLOOR SUPPORT BEAMS MAY CAUSE THE SUMP PAN TO BE PUNCTURED BY LOADED FLOOR GRATE SUPPORTS AT LESS THAN THE FLOOR LOAD RATING OF 250 #/SQ FT.. FILL VOIDS IN SLAB FOUNDATION.

------- CAUTION --------

DETAILS ARE SHOWN FOR INSTALLATIONS WHICH COMPLY WITH THE RATED ENVIRONMENTAL EXPOSURE OUTLINED IN THE PREFACE. IN CASES WHERE EXPOSURE EXCEEDS THE RATINGS, CUSTOMER IS RESPONSIBLE FOR CONTRACTING A LICENSED ENGINEER TO DESIGN ADEQUATE STRUCTURAL DETAIL FOR THAT INSTALLATION.

---- RECOMMENDATION ----

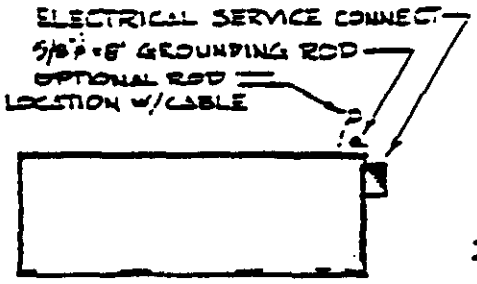
IT IS RECOMMENDED THAT FOR ALL BUT NEW SLABS AND FOUNDATIONS THAT THE EXISTING SLAB OR PAVEMENT (IF LEVEL) BE (1) MARKED FOR HOLD DOWN LOCATIONS, (2) FOUR HOLES, MINIMUM OF 18" DIAMETER BY MIN 12" DEPTH (OR 18" BELOW FROST LINE) BE EXCAVATED, AND (3) AFTER BUILDING IS SET ON LOCATION, THAT THE HOLES BE FILLED WITH CONCRETE AND MUD-SET "J" ANCHOR BOLT (PER PREVIOUS PAGE) BE SET IN PLACE. LIGHTEN AFTER CURING.

------ SEE DETAIL "C" ABOVE ------

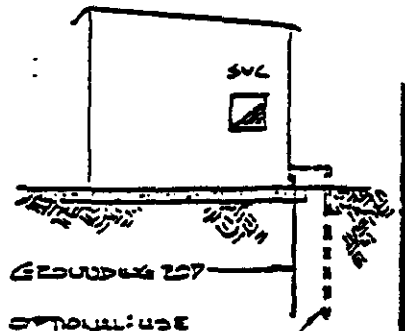
SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENANCE MAN.

TITLE:
HOLD DOWN & FOUNDATION DETAILS



ELECTRICAL
PLAN VIEW



END ELEVATION-ELECTRICAL

SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENANCE MANUAL

TITLE: ELECTRICAL DETAIL

WARNING

ONLY QUALIFIED ELECTRICIANS ARE TO BE USED FOR ROUGH AND FINISH ELECTRICAL INSTALLATION. FACTORY SUPPLIES ELECTRICAL PANEL PRE-WIRED FOR ALL SYSTEMS AND SPECIFIES ELECTRICAL REQUIREMENTS FOR EACH CONNECTION. FIELD WIRING SHALL COMPLY WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

WARNING

GROUNDING ROD AND CABLE MUST BE INSTALLED AS SHOWN, OR AS PER THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. IMPROPER INSTALLATION MAY ALLOW STATIC BUILD-UP IN THE BUILDING WHICH MAY RESULT IN EXPLOSION.

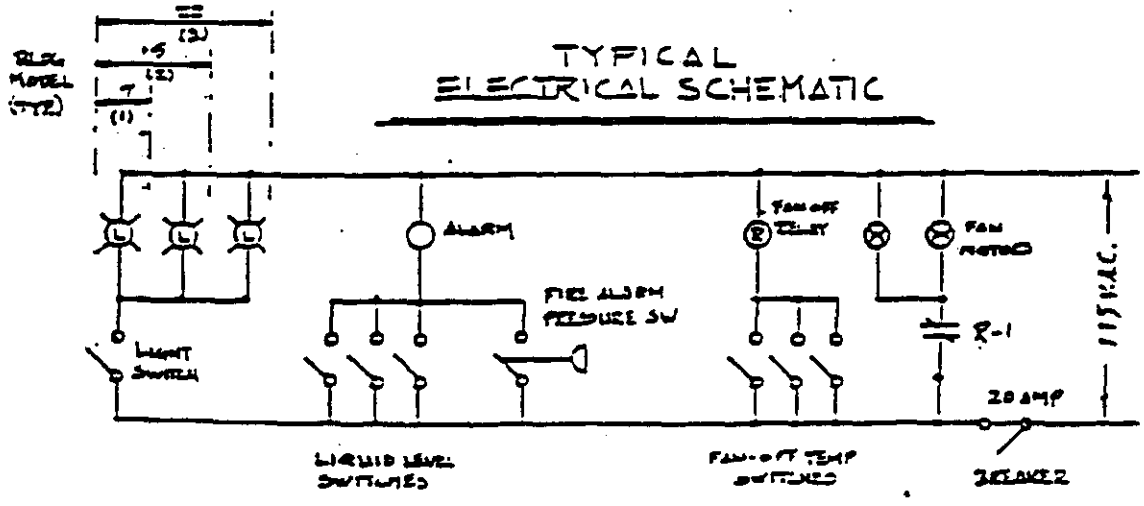
CAUTION

POWER REQUIREMENTS SHOULD BE DETERMINED AFTER CUSTOMER REQUIRED OPTIONS ARE DEFINED. SAFETY STORAGE, INC. WILL PROVIDE ACTUAL REQUIREMENTS BASED ON MINIMUM ELECTRICAL SYSTEMS USE, OR ON SITE HI-SERVICE POWER AVAILABLE.

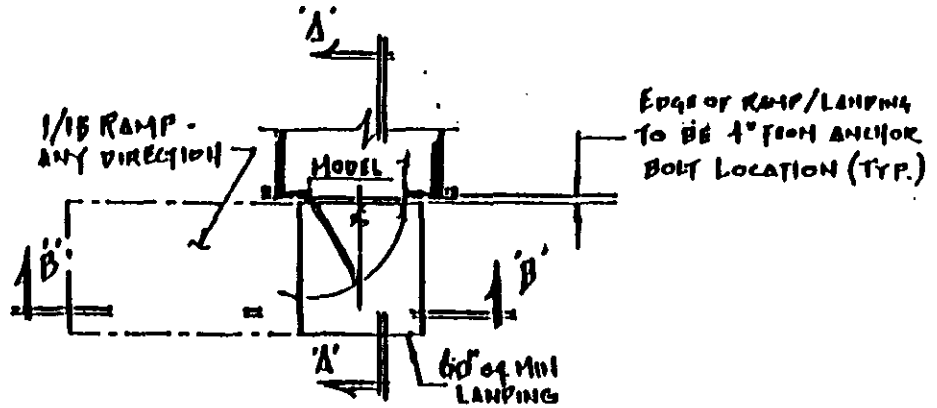
CAUTION

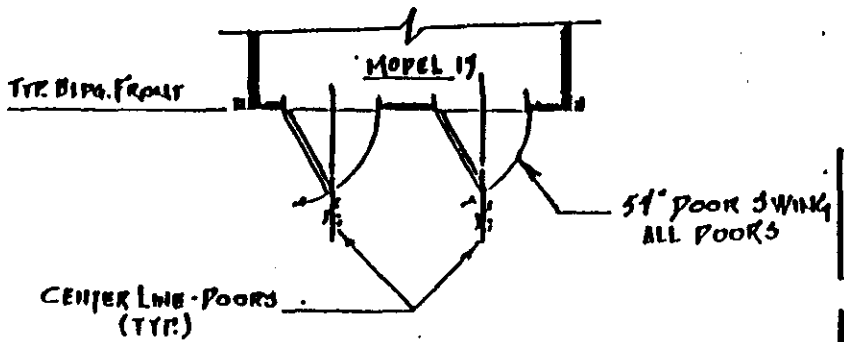
THESE DRAWINGS INDICATE APPROXIMATE LOCATIONS OF POWER IN-PUT ON SITE. BASED ON ACTUAL CUSTOMER ORDER, LOCATION OF FEEDER LINES AND POWER PANEL MAY CHANGE. CONSULT CUSTOMER ORDER FORM TO VERIFY PANEL LOCATION PRIOR TO INSTALLING UNDERGROUND FEEDER LINES OR JUNCTION BOXES.

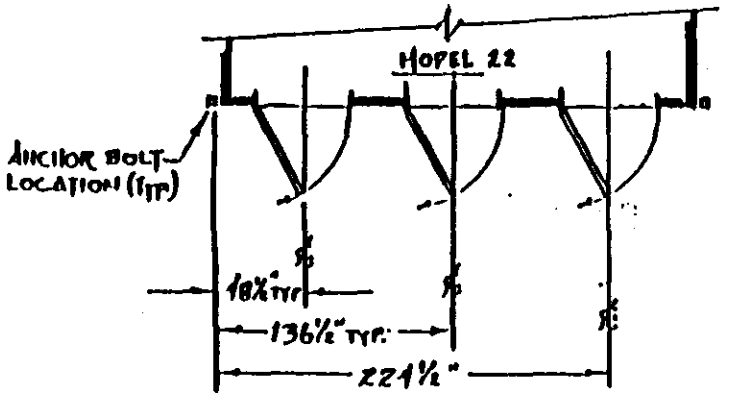
TYPICAL
ELECTRICAL SCHEMATIC

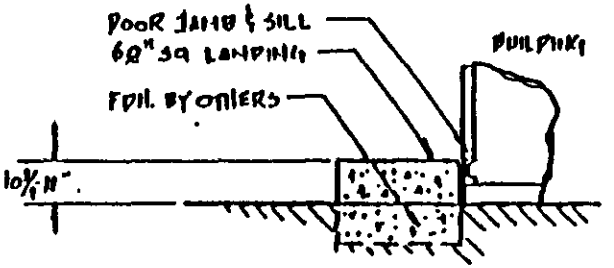


FIELD MANUAL PG 44

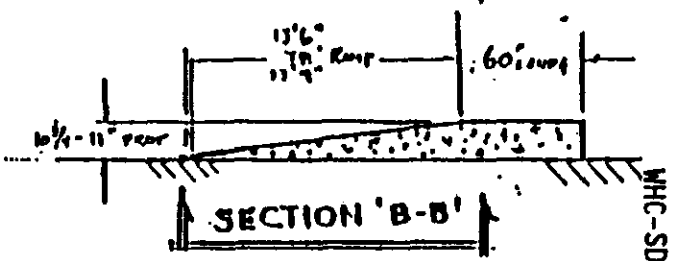








SECTION 'A-A'



SECTION 'B-B'

CAUTION

MAXIMUM RAMP PITCH SHOULD NOT EXCEED 1" DROP IN 15" RUN I.A.W. UBC. MAXIMUM HAND TRUCK OPERATION SAFETY IS ACHIEVED BY PROVIDING A MIN 60" SQUARE LEVEL LANDING ALTHOUGH A 1/16 RAMP SERVES LANDING NEEDS.

CAUTION

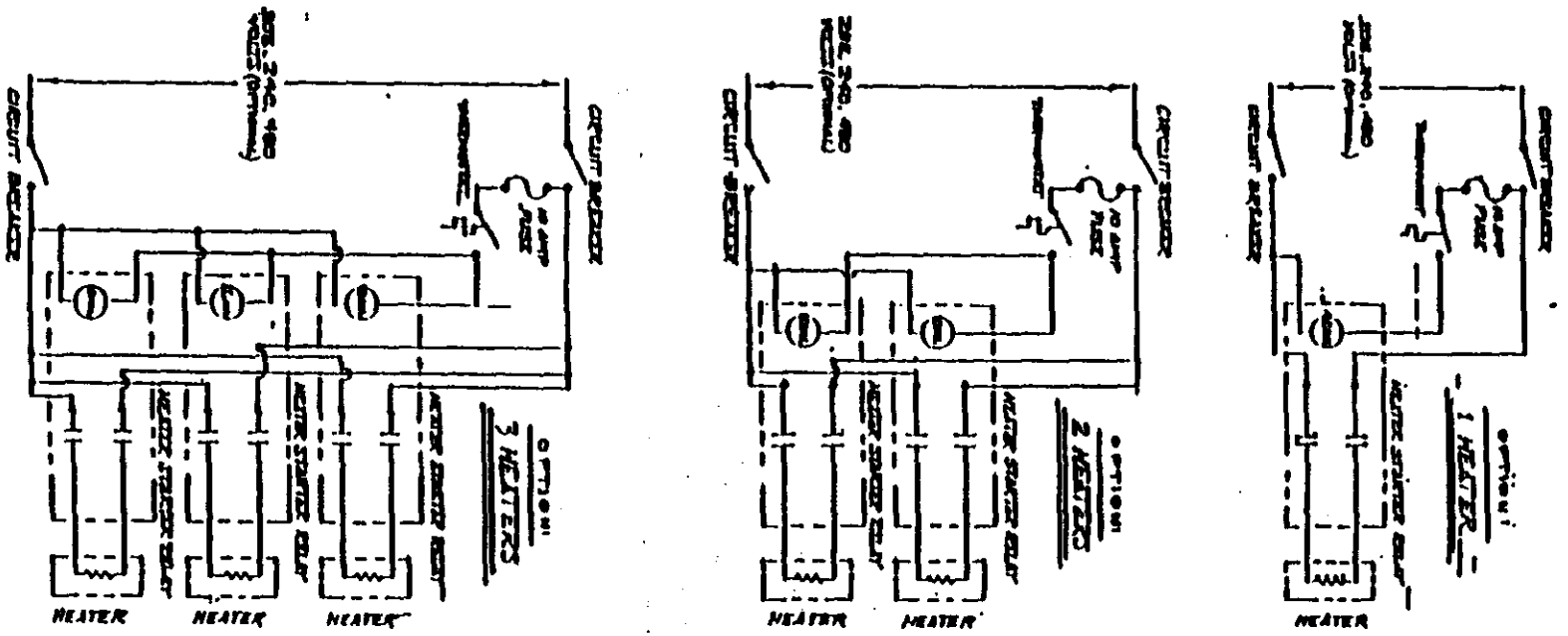
REINFORCED CONCRETE AND STRUCTURAL LUMBER LANDINGS SHALL BE DESIGNED BY A LOCAL LICENSED ENGINEER RETAINED BY THE USER. INFORMATION OF THIS PAGE IS TO SERVE AS A DESIGN GUIDE ONLY.

SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENANCE MANUAL

TITLE:
LANDING AND RAMP DETAILS 1/8"=1'

WHC-SD-EN-SAD-016, REV 0-B



SYSTEM SCHEMATICS - HEATER OPTION

CAUTION

THE 208, 240, AND 480 VOLTS (OPTIONAL) SHOWN IN THE HEATING SCHEMATICS ARE INTENDED TO SERVE AS A GUIDE FOR THE LOCAL ELECTRICIAN TO TAP PHASES OR OTHER AVAILABLE POWER TO ACHIEVE REQUIRED POWER FOR HEATERS. ACTUAL WIRING DETAILS ARE TO BE DETERMINED ON SITE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

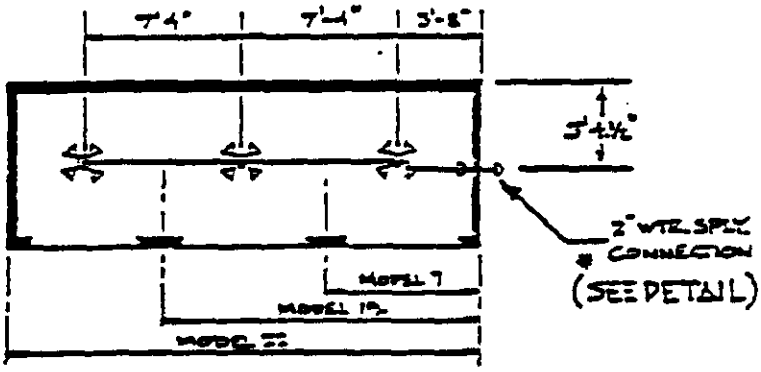
NOTE

WIRING REQUIREMENTS FOR TEMPERATURE CONTROLLED BUILDING AIR CONDITIONING SYSTEMS ARE DELIVERED TO THE BUILDING SITE ONLY WHEN THAT SYSTEM IS ORDERED AS AN OPTION.

SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENANCE MANUAL

TITLE:
ELECTRICAL DETAIL (OPTIONS)

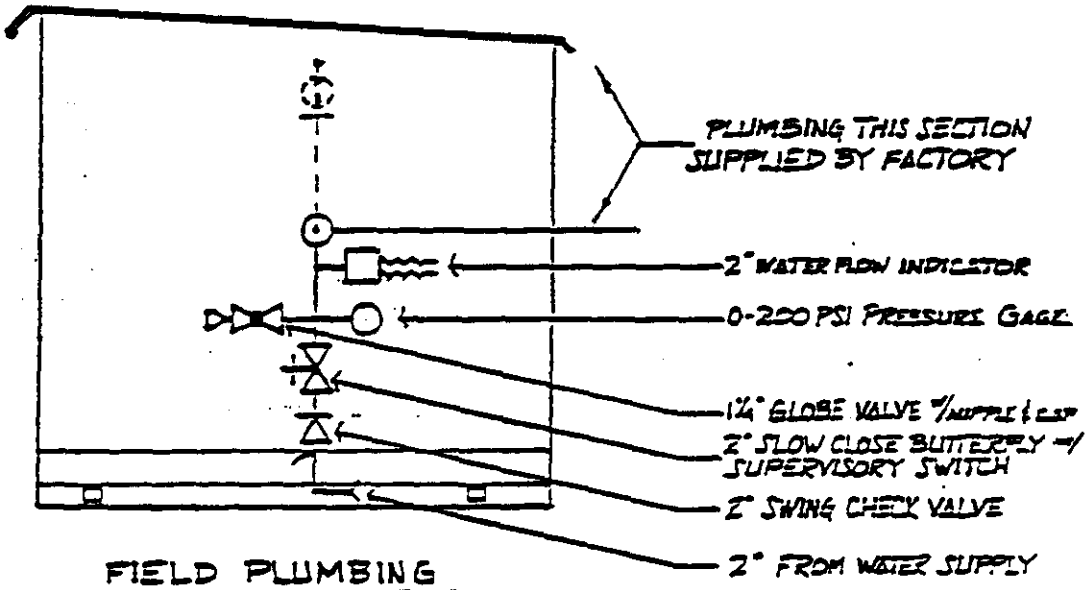


SAFETY STORAGE
2301 Bert Drive
Hollister, CA. 95023

FIELD INSTALLATION, OPERATION AND MAINTENANCE MANUAL

TITLE: SPRINKLER ASSEMBLY FIELD PLUMBING

BUILDING AS FACTORY PLUMBED
— PLAN VIEW —



FIELD PLUMBING
ELEVATION

GENERAL INFORMATION

FIRE SPRINKLER SYSTEM SHALL BE CONNECTED TO A RELIABLE WATER SUPPLY CAPABLE OF FURNISHING 120 GPM @ 37 PSI AT THE 2" WATER SUPPLY CONNECTION POINT. SUPPLY PIPING SIZE, MATERIALS AND ARRANGEMENT SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION.

WATER FLOW AND VALVE SENSORY DEVICES ON THE SPRINKLER SYSTEM AND AN ALARM SWITCH ON THE DRY CHEMICAL SYSTEM (IF INSTALLED) CAN BE PROVIDED BY YOUR LOCAL LICENSED FIRE PROTECTION ENGINEER CONTRACTOR.

WARNING

THE DESIGN AND RECOMMENDATIONS FOR SPRINKLER SYSTEM HOOK-UP FOR THE MODEL 7, 15, AND 22 and MODELS 14, 30 and 44 SAFETY STORAGE BUILDINGS HAVE BEEN ENGINEERED FOR THOSE BUILDINGS ONLY, AND SHALL NOT BE USED ON ANY OTHER SYSTEM OR BUILDINGS. ALL HOOK-UP SHALL COMPLY WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

Periodic Maintenance Schedule

FOR ALL MODEL BUILDINGS

Maintenance Item	Inspection Frequency				Recommended Action
	Week	Month	6 month	Year	
Check Containers for Leaks	!				Clean any spill. dispose material
If Spills. check paint	!	•			Prime and paint
Check Exterior Paint		•			Touch-up primer and topcoat w/ Polyurethane
Entire Building Paint				•	Repaint 5 years or less as req'd
Sump @ floor grate spots		•			Remove stored mat'l & repair
Lights		•			Replace if Req'd
Liquid Level Alarms		!			Verify operation. repair if req'd
Eye wash station	!				Repair at once if inoperative
Door locks. latches		•			Repair/replace if defective
Explosion panel gaskets			•		Insure tight seals
Explosion Panel "Z" clips			•		Repair/replace if defective
Ventilation System		!			Immediately repair if defective
Check dry chem system		!			Immediately repair if defective
Door hinges			•		Oil. Paint as required
Plywood floor surface				•	Touch up exposed wood W/ epoxy non-slip paint
Fiberglass Grating			•		Check for nicks. gouges in surface which could cause grate failure if loaded
Hold down bolts				•	Check for rust/rust-through, paint or replace as req'd
General Fire and Electrical	•	•	•	•	General inspections by local authority / agency. Regardless of maintenance inspection schedule herein, local authority schedule will prevail only if more frequent than above schedule.

NOTES:

• Indicates important item to be checked and repaired periodically.

! Indicates CRITICAL item which must be checked and replaced/repaired IMMEDIATELY if defective.

Your Safety Storage, Inc. hazardous material storage building is a engineered product designed and manufactured for a specific use. In order that you continue to receive the full, safe and reliable use of this building, Safety Storage, Inc. has compiled the following important information. It is mandatory that all personnel having access to your hazardous and flammable materials, and/or to this building, be adequately trained in the handling and use of your materials, and especially in the use, inspection and operation of your Safety Storage Inc. building and systems.

REFERENCE TABLES

CHEMICAL RESISTIVITY OF FINISHES AND MATERIALS

Safety Storage, Inc.

- - - -

Hazardous and Flammable Material Storage Buildings

CHEMICAL	PAINTED SURFACES		FLOOR		
	INTERIOR	EXTERIOR	PLYWOOD	FIBERGLASS	PP SUMP LINER
Acetic Acid 5%	Y	Y	Y	Y	Y
Acetic Acid 50%	O	O	O	Y	Y
Acetone - Sat	-	-	-	-	Y
Aluminum Sulfate - Saturated	-	-	-	Y	-
Ammonium Hydroxide 30%	Y	Y	Y	O	Y
Ammonium Nitrate - Saturated	-	-	-	Y	-
Ammonium Sulfate - Saturated	-	-	-	Y	-
Benzene Sulphonic Acid Sat.	-	-	-	Y	-
Benzoic Saturated	-	-	-	Y	-
Benzyl Alcohol - pure	-	-	-	-	Y
Calcium Chloride	-	-	-	Y	Y
Calcium Hydroxide - Saturated	-	-	-	-	Y
Caustic Potash, Lye 50%	-	-	-	-	Y
Caustic Soda up to 50%	-	-	-	-	Y
Chromic 5%	-	-	-	Y	Y
Chromic Acid 20%	O	O	O	O	Y
Citric Acid - Saturated	Y	Y	Y	Y	Y
Copper Chloride 20%	Y	Y	Y	-	-
Ethanol 95%	-	-	-	Y	-
Ethyl Alcohol	Y	Y	Y	-	Y
Ethelene Glycol 100%	-	-	-	Y	Y
Ferric Chloride 100%	-	-	-	Y	-
Ferric Nitrate - Saturated	-	-	-	Y	-
Feris Chloride - Saturated	-	-	-	Y	-
Formaldehyde 37%	Y	Y	Y	-	-
Gasoline	Y	Y	Y	Y	Y
Hydrobromic 50%	-	-	-	Y	Y
Hydrochloric Acid 5%	Y	Y	Y	Y	Y
Hydrochloric Acid 20%	-	-	-	Y	Y
Hydrochloric Acid 37%	-	-	-	Y	Y
Hydrogen Peroxide 5%	Y	Y	Y	Y	Y
Hydrogen Sulfide - pure	-	-	-	-	Y
Hydrogen Sulfide - Saturated	-	-	-	-	Y
Hypochlorous 10%	-	-	-	Y	-
Hypochlorite Solution 6%	Y	Y	Y	-	-
Iodine	-	-	-	-	Y
Kerosene	Y	Y	Y	Y	O

CHEMICAL RESISTIVITY OF FINISHES AND MATERIALS
continued

CHEMICAL	PAINTED SURFACES		FLOOR		
	INTERIOR	EXTERIOR	STD PLYWOOD	FIBERGLASS	PP SUMP LINER
Lactic Acid	Y	Y	Y	Y	-
Laundry Detergent	Y	Y	Y	Y	-
Lead Acetate - Saturated	-	-	-	Y	-
Magnesium Carbonate- Saturated	-	-	-	Y	-
Magnesium Chloride - Saturated	-	-	-	Y	-
Magnesium Nitrate - Saturated	-	-	-	Y	-
Mercuric Chloride - Saturated	-	-	-	Y	-
Mercurous - Sat	-	-	-	Y	-
Mercurous Chloride - Sat	-	-	-	Y	-
Methanol	-	-	-	-	Y
Methyl Ethyl Ketone	Y	Y	Y	-	Y
Mineral Spirits	Y	Y	Y	Y	-
Mineral Oil	Y	Y	Y	Y	-
Nickle Nitrate - Sat	-	-	-	Y	-
Nickle Sulfate - Sat	-	-	-	Y	-
Nitric Acid 5%	Y	Y	Y	Y	Y
Nitric Acid 10%	-	-	-	Y	Y
Oxalic - Saturated	-	-	-	Y	-
Perchloric Acid 10%	-	-	-	-	Y
Perchloric Acid 70%	-	-	-	-	Y
Phosphoric Acid	Y	Y	Y	Y	Y
Photographic develop. emuls. fx	-	-	-	-	Y
Potassium Bromate - Saturated	-	-	-	-	Y
Potassium Chloride - Saturated	-	-	-	Y	Y
Potassium Cyanide - Saturated	-	-	-	-	Y
Potassuim Dichromate - Sat	-	-	-	Y	-
Potassium Ferrocyanide- Sat	-	-	-	Y	-
Potassium Iodide - Saturated	-	-	-	-	Y
Potassium Nitrate - Sat	-	-	-	Y	-
Potassium Permanoinate - Sat	-	-	-	Y	-
Pthalic - Saturated	-	-	-	Y	-
Saturated Chlorine Water	Y	Y	Y	-	-
Saturated Phenol	O	O	O	-	-
Saturated Sugar	Y	Y	Y	-	-
Skydrol 500	O	Y	O	-	-
Sodium Bicarbonate - Saturated	-	-	-	Y	Y
Sodium Chloride 5%	Y	Y	Y	Y	-
Sodium Chloride 30%	Y	Y	Y	Y	-
Sodium Flouride - Saturated	-	-	-	-	Y
Sodium Hydroxide 50%	Y	Y	Y	O	-
Sodium Nitrate - Saturated	-	-	-	Y	-
Sodium Phosphate - Saturated	-	-	-	-	Y
Sodium Sulphide - Saturated	-	-	-	-	Y
Sour Crude Oil	Y	Y	Y	Y	-

CHEMICAL RESISTIVITY OF FINISHES AND MATERIALS
continued

CHEMICAL	PAINTED SURFACES		FLOOR		
	INTERIOR	EXTERIOR	STD PLYWOOD	FIBERGLASS	PP SUMP LINER
Stannic Chloride - Saturated	-	-	-	Y	-
Styrene	Y	Y	Y	O	-
Sulphuric Acid 5%	Y	Y	Y	Y	Y
Sulphuric Acid 25%	Y	Y	Y	O	Y
Sulphuric Acid 75%	-	-	-	-	Y
Sulphur Dioxide - pure	-	-	-	-	Y
Tannic - Saturated	-	-	-	Y	-
Tartaric - Saturated	-	-	-	Y	-
Trichloroethylene	Y	Y	Y	O	Y
Water - Sea, Deionized, Tap	Y	Y	Y	Y	Y
Zinc Chloride - Saturated	-	-	-	Y	-

Legend:
Y - resistant or conditionally resistant to material listed
O - not satisfactorily resistant to material listed
- - not tested for resistivity, or no data available on material listed

General Notes:

1) In some splash or spill situations, some of these chemicals may represent a more corrosive environment than that indicated in the chart due to the evaporation of water and the resulting concentration of the corrosive element. A regular washing down of splashes and sills may be beneficial under these conditions.
2) All data represented by Safety Storage, Inc. herein is based on the best information available and believed to be correct. Data presentation herein is not to be construed as a warranty that the product will conform to the test data. The user should use his own tests to determine suitability for any purpose whatsoever.
3) Safety Storage, Inc. emphasizes that the data herein is to be used only as a guide since certain operating conditions (ie: concentration, temperature, exposure time, mechanical abuse, and synergistic effect of chemical combinations etc.) vary and are not within the control of Safety Storage, Inc. nor our material suppliers.
4) Safety Storage, Inc. should be contacted if the used has specific questions concerning resistivity of materials or finishes against materials not listed, or for concentrations not listed. In some cases, testing may be performed at the sole expense of the used by Safety Storage, Inc., of a qualified testing facility. In no way does the provision of a finish or material tested imply that Safety Storage warrants that product for use in any application, primarily but not exclusively based on the reasons given in (2) & (3) above.

OTHER PRODUCTS BY SAFETY STORAGE, INC.

Specific information regarding any of Safety Storage, Inc.'s products listed below may be obtained through your local Safety Storage Representative, or by contacting Safety Storage, Inc. directly.

With over five years pioneering and producing engineered hazardous material storage buildings, you can be assured that we can deliver either a standard product, or provide specially designed systems as required to meet ALL of your hazardous material storage needs.

ASK ABOUT OUR OTHER PRODUCTS:

. Model 14-FR	2-Hour Safety Storage Fire-Rated Storage Building
. Model 30-FR	2-Hour Safety Storage Fire-Rated Storage Building
. Model 44-FR	2-Hour Safety Storage Fire-Rated Storage Building
. Model 10-FR	2-Hour Safety Storage Fire-Rated Storage Building
. Model 14-FR/EP	2-Hour Fire-Rated Storage Building with Explosion Relief
. Model 30-FR-EP	2-Hour Fire-Rated Storage Building with Explosion Relief
. Model 44-FR-EP	2-Hour Fire-Rated Storage Building with Explosion Relief
. Model 7	Steel Safety Storage Building
. Model 15	Steel Safety Storage Building
. Model 22	Steel Safety Storage Building
. Model 7 EP	Explosion Relief Safety Storage Building
. Model 15 EP	Explosion Relief Safety Storage Building
. Model 22 EP	Explosion Relief Safety Storage Building

OTHER PRODUCTS BY SAFETY STORAGE, INC.
(continued)

. Model 4	Steel Space Saver Safety Storage Building
. Model 6	Steel Space Saver Safety Storage Building
. Model 10	Steel Space Saver Safety Storage Building
. SAFE-T-PALLET	Forklift Spill Pallet with Spill Containment Sump
. SAFE-T-TRAY	Secondary Spill Containment Tray for Corrosives and Other Hazardous Materials
. SAFE-T-SUMPS	Secondary Spill Containment Sumps for Corrosives and Other Hazardous Materials

UIDELINES FOR ANSUL SPA-50 PRE-ENGINEERED FIRE SUPPRESSION SYSTEM APPLICATION FOR SAFETY TORAGE INC. HAZARDOUS MATERIAL STORAGE CONTAINERS

Literature Package

ncluded with each SPA-50 Pre-Engineered Fire Suppression System is a literature package which defines the SPA-50 application and includes the following:

1. Ansul Application Drawing
2. Owners' Manual
3. Hazardous Material Guideline
4. Inspection/Installation Checkout Sheet
5. SPA-50 Authorized Distributor Listing

Application

The Ansul SPA-50 system is designed to provide automatic detection and actuation for total flood application to the interior of the Storage Container. The system utilizes fusible link detection which actuates the ANSUL AUTOMAN releasing device. The ANSUL AUTOMAN release punctures a nitrogen cartridge which pneumatically opens the agent tank valve expelling the multipurpose FORAY dry chemical agent.

NOTICE

Ensure that the Storage Container doors remain closed at all times after normal transfer of hazardous materials. Closed doors on the container are important for proper fire suppression.

Hazardous Materials Guideline

The Ansul SPA-50 can be used to suppress fires involving most flammable liquids and gases.

Types of materials that can be protected by the SPA-50 are as follows:

a. Many flammable or combustible liquids and combustible gases.

b. Many combustible solids having burning characteristics similar to naphthalene and pitch, which melt when involved in fire.

c. Electrical hazards such as transformers or oil circuit breakers.

d. Ordinary combustibles such as wood, paper, or cloth if the multipurpose dry chemical is used so that it can reach all surfaces involved in combustion.

e. Some plastics, depending upon the type of material and its configuration of hazard. For application information concerning specific plastic materials, consult Applications Engineering, Ansul Fire Protection, Marinette, Wisconsin (715-735-7411).

Types of materials that cannot be protected by SPA-50 are as follows:

a. Chemicals containing their own oxygen supply, such as cellulose nitrate.

b. Combustible metals such as sodium, potassium, magnesium, titanium, and zirconium.

c. Deep-seated or burrowing fires in ordinary combustibles where the dry chemical cannot reach the point of combustion.

d. Some plastics depending upon the type of materials and its configuration of the hazard. For application information concerning specific plastic materials, consult Applications Engineering, Ansul Fire Protection, Marinette, Wisconsin (715-735-7411).

For further definition of specific materials on which the SPA-50 can be used to suppress fires, consult the local fire code or insurance authority; NFPA Fire Protection Guide on Hazardous Materials, or call Ansul Fire Protection, Applications Department, 715-735-7411.

System Hardware Location

The SPA-50 hardware must be located so as not to be subjected to severe weather conditions, corrosion, mechanical or chemical damage, or explosion hazard. The hardware is located in the normal environment inside the storage container. The system is normally not subjected to mechanical, chemical, corrosive or explosion hazards.

Where it is the judgment of the end user, local fire code or insurance authorities that the agent tank and releasing device is susceptible to mechanical, chemical, corrosive, fire or explosive damage, the agent tank and/or releasing device shall be moved to an adjacent location where a suitable enclosure or guard shall be provided. If the hardware is required to be moved, an authorized Ansul SPA-50 distributor should be contacted to provide supervision and/or labor services.

Servicing the SPA-50

The SPA-50 system is installed intact and housed in the storage container, but is not activated for service. Before the storage container is placed in service, the SPA-50 system must be inspected by a local authorized Ansul SPA-50 distributor. Refer to SPA-50 Owner's Manual and literature package for further details.

It is recommended that the SPA-50 system also be inspected at least semi-annually by a local authorized Ansul SPA-50 distributor. The attached "Installation and Inspection Checkout Sheet" verifies that the SPA-50 system has been installed and inspected in accordance with Ansul's application layout drawing. This form should be completed by the local Ansul SPA-50 distributor who inspects and places the system into service.

Copies of the form should be sent to the Safety Storage Company, your local authority having jurisdiction, if applicable, the Ansul distributor, and your records.

Refer to the attached Ansul SPA-50 Authorized Distributor Listing to make arrangements for final inspection and activation of the system and follow up periodic inspections.

ANSUL

SPA-50 INSTALLATION/INSPECTION CHECKOUT SHEET

The following is a minimum required checklist for installation and inspection of the SPA-50 system to provide reasonable assurance that the SPA-50 system is installed correctly and placed into service. Those authorized to place the system into service should refer to SPA-50 Maintenance Manual, Part No. 68304, for step to step procedures to provide maximum assurance that the system is installed correctly and ready for service.

Installer	Distributor Inspector	
___	___	Tank and bracket accessible for service, nameplate visible, securely mounted.
___	___	Tank gauge visible and pointer in green area.
___	___	Pneumatic actuator installed on tank.
___	___	Correct distribution pipe size, length, number and size fittings.
___	___	Pipe and fittings rigidly supported with approved hanger.
___	___	Pipe reamed, blown clear and swabbed with solvent.
___	___	Nozzles installed in correct location and orientation.
___	___	Blow off caps installed on nozzles.
___	___	ANSUL AUTOMAN release securely mounted.
___	___	Correct actuation pipe size, length, number of fittings used.
___	___	Actuation pipe rigidly supported by approved hangers.
___	___	Pneumatic actuation installed and connected to actuation piping.
___	___	Vent or safety relief valve installed in actuation line.
___	___	Manual cable pull station installed in an accessible location.
___	___	Fusible link detectors and brackets securely mounted.
___	___	Detection line conduit installed.
___	___	Alarm bell with weather proof back box installed.
___	___	Pressure switch installed.

The following components have been tested and the SPA-50 system has been placed into service. CAUTION: ANSUL AUTOMAN release cartridge should not be installed at this time.

Distributor Inspector	
___	With cartridge not installed, ANSUL AUTOMAN release recocked.
___	Manual pull station actuates ANSUL AUTOMAN release.
___	After recocking ANSUL AUTOMAN release, "test" fusible link actuates release.
___	Pressure switch and alarm operates
___	"Test" link replaced with 165 °F fuse link.
___	ANSUL AUTOMAN recocked.
___	Electrical power restored to pressure switch.
___	LT-10-R nitrogen cartridge installed in ANSUL AUTOMAN release.
___	Lock bar removed.
___	Ring pin inserted through strike button and sealed.
___	Inspection tag affixed to unit.
___	Comments: _____

_____

Installer Representative _____ Date _____

Ansul Distributor, Inspector Representative _____ Date _____

End User Respresentative _____ Date _____

Authority Having Jurisdiction Representative _____ Date _____

ORIGINAL - [illegible]; YELLOW - [illegible]; PINK - End User

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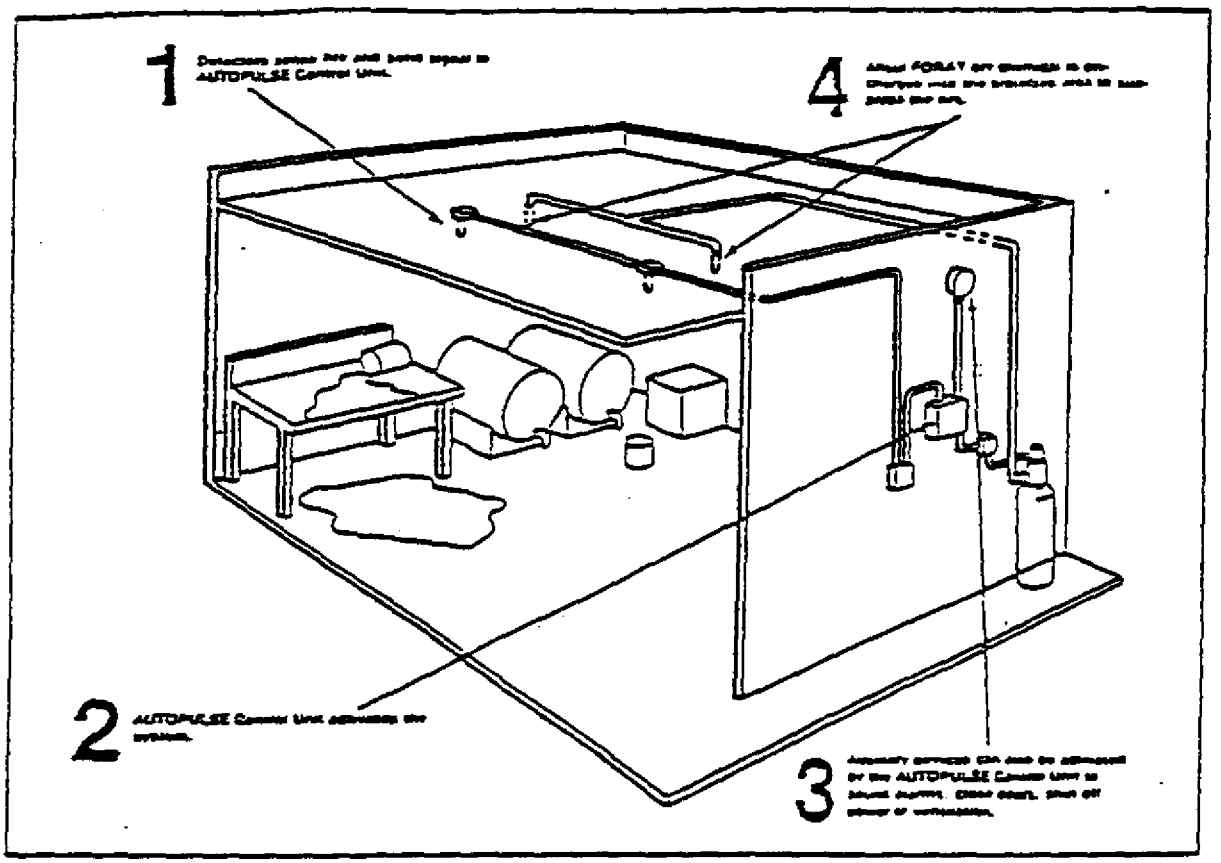
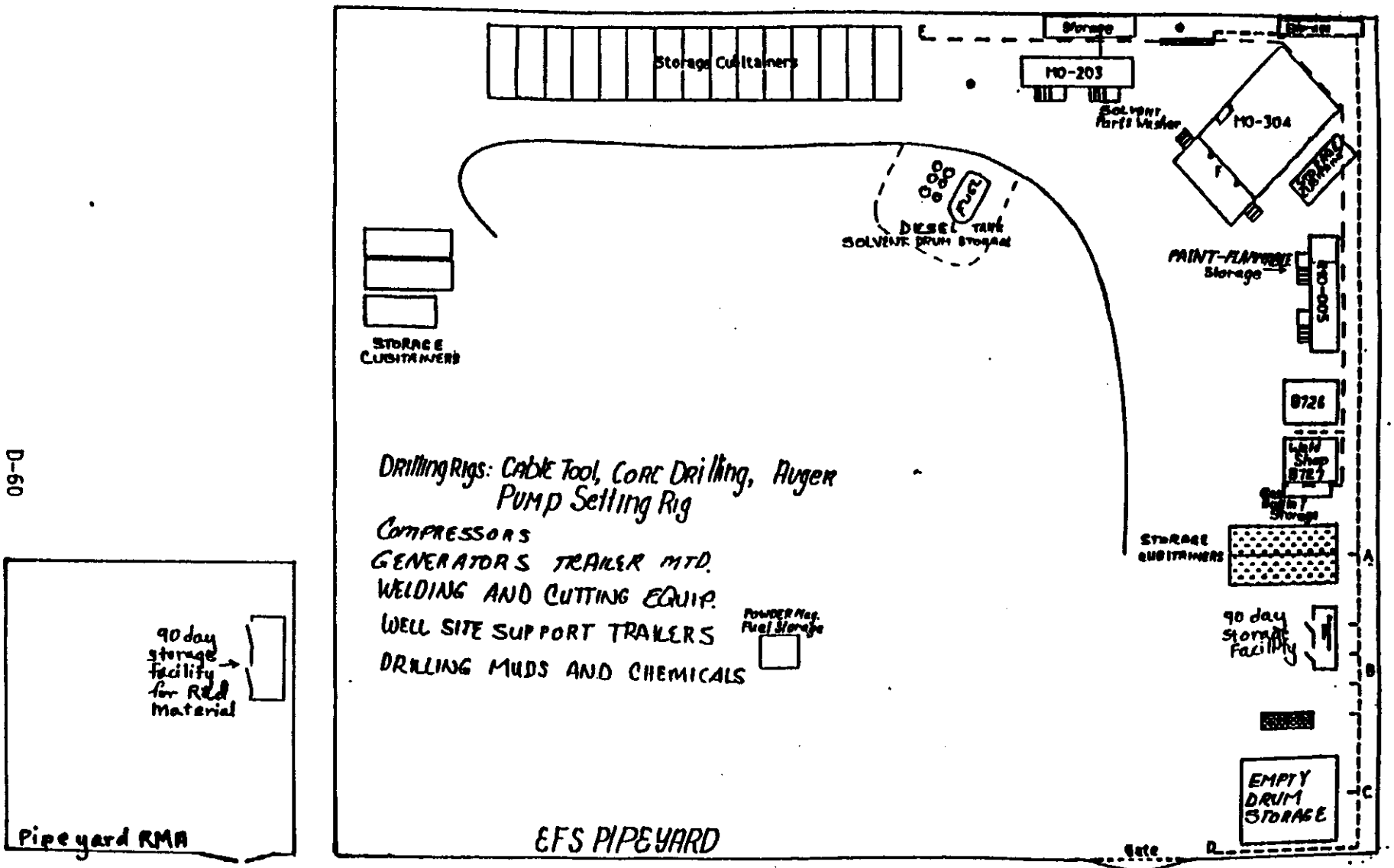
ANSUL FIRE PROTECTION, MARINETTE, WI 54143-2542 715-735-7411 Form No. F-6777 ©1987 Worldwide U.S., Inc. Litho in U.S.A.

HOW DOES THE SYSTEM OPERATE?

The drawing below illustrates a typical hazard area. In this example, a paint storage room is protected by an Ansul SPA-50 System employing a fixed temperature detector. This particular hazard has an area of 3,000 cu. ft. (84.9 m^3) requiring total flooding protection with 4 nozzles. Integral to the protection is the simple zone control panel with accessory door closure operation.





D-60

WHC-SD-EN-SAD-016, REV 0-B

DISTRIBUTION SHEET

To:	From:	Date:
Distribution	J. A. Locklair	November 10, 1993

Project Title/Work Order:

Safety Assessment for Environmental Investigations and Site Characterizations
Volume 3: Aggregate Safety Assessment for Installing Groundwater Monitoring Wells

EDT No.: WHC-SD-EN-SAD-016, VOLUME 3, REV.0-B ECN No.: 189920

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
M. R. Adams	H6-01	X		
J. R. Bell	R3-09	X		
T. L. Bennington	H4-16	X		
J. A. Bultena	N3-06	X		
R. A. Carlson	H6-03	X		
J. A. Charboneau	S3-10	X		
J. J. Dorian	H6-30	X		
K. R. Fecht	H6-06	X		
D. J. Foucault	S2-50	X		
R. P. Henckel	H6-02	X		
L. C. Hulstrom	H6-03	X		
N. R. Kerr	H4-67	X		
J. A. Locklair (2)	H4-67			
D. J. Moak	N3-05	X		
W. H. Price	N3-05			
K. A. Smith	N1-06	X		
W. R. Thackaberry	H4-16	X		
D. S. Takasumi	L4-93	X		
M. A. Tredway	R3-54	X		
B. A. Williams	H6-06	X		
T. M. Wintczak	H6-27	X		
J. J. Zimmer	H4-67	X		
Central Files (2 + original)	L8-04	X		
Dockett Files (2)	H5-36	X		
ERSS File (3)	H4-67	X		
~~EPIC (2)~~ FFC (1)	H6-08	X		

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Title Aggregate Safety Assessment for Installing Groundwater Monitoring Wells	Unclassified Category UC-	Impact Level 2 ESQ

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